

LEGISLATIVE RESEARCH COMMISSION

HAW RIVER AND JORDAN RESERVOIR WATER QUALITY



REPORT TO THE
1985 GENERAL ASSEMBLY
OF NORTH CAROLINA

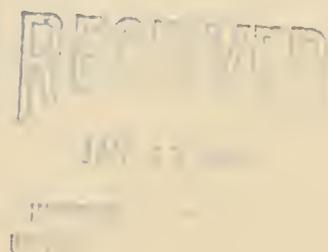
RECEIVED
JAN 15 1986

**LEGISLATIVE
RESEARCH COMMISSION**

**HAW RIVER AND JORDAN RESERVOIR
WATER QUALITY**



**REPORT TO THE
1985 GENERAL ASSEMBLY
OF NORTH CAROLINA**



A LIMITED NUMBER OF COPIES OF THIS REPORT IS AVAILABLE
FOR DISTRIBUTION THROUGH THE LEGISLATIVE LIBRARY:

ROOM 2126, 2226
STATE LEGISLATIVE BUILDING
RALEIGH, NORTH CAROLINA 27611
TELEPHONE: (919) 733-7778

OR

ROOM 500
LEGISLATIVE OFFICE BUILDING
RALEIGH, NORTH CAROLINA 27611
TELEPHONE: (919) 733-9390

STATE OF NORTH CAROLINA
LEGISLATIVE RESEARCH COMMISSION
STATE LEGISLATIVE BUILDING
RALEIGH 27611



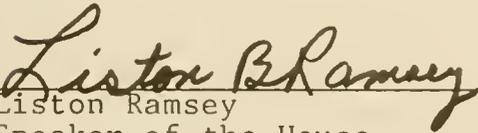
13 December 1984

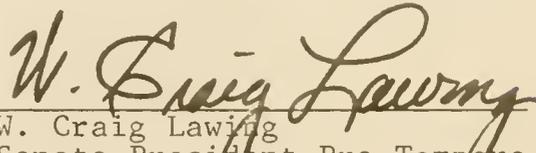
TO THE MEMBERS OF THE 1985 GENERAL ASSEMBLY:

The Legislative Research Commission herewith reports to the 1985 General Assembly on the matter of Water Quality in the Haw River and Jordan Reservoir. This report is made under the authority of G.S. 120-30.17(1) and pursuant to Section 16 of 1983 Session Laws Chapter 905 (HB1142).

This report was prepared by the Legislative Research Commission Committee on Water Quality in the Haw River and Jordan Reservoir; and the report and recommendations are approved and transmitted by the Legislative Research Commission to the members of the 1985 General Assembly for their consideration.

Respectfully submitted,


Liston Ramsey
Speaker of the House


W. Craig Lawing
Senate President Pro Tempore

Cochairmen

LEGISLATIVE RESEARCH COMMISSION

PREFACE

The Legislative Research Commission, authorized by Article 6B of Chapter 120 of the General Statutes, is a general purpose study group. The Commission is cochaired by the Speaker of the House and the President Pro Tempore of the Senate and has ten additional members, five appointed from each house of the General Assembly. Among the Commission's duties is that of making or causing to be made, upon the direction of the General Assembly, "such studies of and investigation into governmental agencies and institutions and matters of public policy as will aid the General Assembly in performing its duties in the most effective manner" (G.S. 120-30.17(1)).

At the direction of the 1983 General Assembly, the Legislative Research Commission has undertaken studies of numerous subjects. These studies were grouped into broad categories and each member of the Commission was given the responsibility for one category of study. The cochairmen of the Legislative Research Commission, under the authority of General Statutes 120-30.10(b) and (c), appointed committees consisting of members of the General Assembly and the public to conduct the studies. Cochairmen, one from each house of the General Assembly, were designated for each committee.

The study of Water Quality in the Haw River and Jordan Reservoir was authorized by the Omnibus Studies Bill, Chapter 905, Session Laws of 1983, with reference to H 1257, the bill originally proposing such a study. The Study Committee made an Interim Report to the 1983 General Assembly (Second Regular Session, 1984).

The Legislative Research Commission grouped this study in its environment area under the direction of Representative Bruce Ethridge. The cochairmen of the Study Committee established by the Research Commission are Senator Russell Walker and Representative Joe Hackney. The full membership of the Committee is listed in Appendix A of this report. Chapter 905 authorizes this study and House Bill 1257, which the Committee was authorized to consider in determining the scope of the study, are also attached in Appendix A.

TABLE OF CONTENTS

	<u>PAGE</u>
LETTER OF TRANSMITTAL.	i
PREFACE.	ii
INTRODUCTION	1
COMMITTEE PROCEEDINGS	
A. October 26, 1984 Meeting--Focus on Toxics	2
B. November 14, 1984 Meeting--Focus on Watershed Planning . .	6
FINDINGS AND RECOMMENDATIONS	
1. Toxics Monitoring	10
2. Technical Assistance to Private Sector.	10
3. Inventory Requirement	11
4. Regulatory Flexibility.	11
5. Triangle J Water Resources Program.	12
6. Minimum State Standards Option.	12
7. Advisory Committee Option	12
8. Clean Detergent Bill.	13
9. Nutrient Sensitive Watershed Program.	13
10. Wastewater Financing.	13
11. Study Continuation.	14
APPENDICES	
Appendix A	
Committee Membership.	A-1
Chapter 905	A-2
House Joint Resolution Bill 1257.	A-7
Appendix B	
Haw River and Jordan Lake Description	B-3
Haw River Basin Map	B-1
Jordan Lake Map	B-2

Appendix C

October 26, 1984 Meeting Agenda C-1

Outline of Federal and State Laws Concerning Toxics,
Daniel Long, Committee Counsel. C-2

Remarks of Mr. Lee Fleming, Director of Water Quality
Section, Division of Environmental Management, NRCDC . . . C-5

Remarks of Mr. Bill Hevener, North Carolina Citizens
for Business and Industry C-1

"Monitoring for Toxic Substances in the Waters of
North Carolina", Water Resources Research Institute,
(Draft), November 1984, presented by Dr. David
Howells C-3

Appendix D

Sample Letter to Planning Chairmen D-1

November 14, 1984 Meeting Agenda. D-3

Remarks of Ms. Regina McLaurin, Chairman, Wake
County Planning Board D-4

Remarks of Dr. Edward Holland, Director, Resource
Conservation, Triangle J Council of Governments D-7

Remarks of Dr. Alice Gordon, Chair, Orange County
Planning Board. D-1

Remarks of Ms. Margaret Holton, Water Quality
Committee, League of Women Voters D-2

Remarks of Mrs. Cindy Bland, Chair, Chatham County
Planning Board. D-2

Materials from Ms. Jane Davis, Durham City Council
Member. D-3

Appendix E

Statement of NRCDC's Toxics Programs E-1

Appendix F

Regulatory Flexibility Bill F-1

Appendix G

Statement of Triangle J's Water Resource Program. . . . G-1

Appendix H

Clean Detergent Bill	H-1
Statement of Agricultural Cost Share Program for Nutrient Sensitive Waters	H-3

Appendix I

Statement on Financing of Water and Wastewater Facilities in North Carolina	I-1
--	-----

INTRODUCTION

In its Spring 1984 Interim Report the Haw River and Jordan Reservoir Water Quality Study Committee identified several pressing issues concerning the Haw River and Jordan Reservoir. (See Appendix B for a description and map of the Haw River and Jordan Lake). Among those issues were concerns over toxic substances in the water, nutrient enrichment, regulatory inflexibility, and inadequate program funding.

The Committee proposed or supported the proposal of measures designed to ban the dumping of over 125 additional toxic substances, increase regulatory flexibility, ban phosphate detergent sales, and provide more money for the Department of Natural Resources and Community Development's (NRCD) water quality programs, especially the nutrient sensitive watershed budget proposals.

The proposed phosphate ban generated vigorous public debate and increased public awareness of the issues involved. The General Assembly provided more money for NRCD's clean water programs. It is fair to say that both the General Assembly and the public at large have become more sensitized to water quality issues as a result of this and companion committee's efforts.

In the Fall of 1984, the Committee has continued the educational process by focussing on two salient issues:

1. Toxic substances in the water.
2. Local and regional planning for water quality preservation.

To those ends, the Committee focussed each of its meetings on one of these topics. The first meeting on October 26, 1984, dealt primarily with the toxics question.

COMMITTEE PROCEEDINGS

October 26, 1984--Focus on Toxics

A toxic substance is quite simply, a poison. It is a substance harmful to human or environmental health, a potential cause of death, disease, behavior abnormalities, cancer, genetic mutation, physiological malfunctions, or physical deformities. Through a variety of ways, toxic substances appear in the waters of this State. In order to frame intelligent public policy, legislators need information on the identity of these hazardous substances and the degree of risk associated with them.* Unfortunately, this area is fraught with scientific controversies and legal complexities.

Four speakers addressed the Committee on various aspects of the toxics problem. They were: Mr. Daniel Long, Committee Counsel, on state and federal laws; Dr. Rick Maas, North Carolina State University Water Quality Evaluation Project, on his findings regarding toxics in the Haw and Jordan Lakes, Mr. Lee Fleming, Director of the Water Quality Section, Division of Environmental Management, on NRC's efforts; and Mr. Bill Hevener, North Carolina Citizens for Business and Industries, Environmental Concerns Committee, on business support for regulating toxics. The remarks of Mr. Long, Mr. Fleming, and Mr. Hevener appear in Appendix C, together with a list of participants in the meeting.

*"Hazard" refers to the toxicity of a substance - i.e. a qualitative assessment of its harmful effects. "Risk" refers to a hazard plus exposure - i.e. a quantitative estimate of hazard based on dose and exposure. Generally speaking, a regulatory agency will extrapolate to dose - response data in animals to exposures in man to estimate the human risk, if data is deemed reliable.

The following is a summary of the major issues about toxics which came to light at this meeting.

1. Enormity of problem.

a. Generally. Informed sources estimate that about four million chemicals have been invented since 1800, about three million of these since 1945. The numbers of chemicals in commercial use are considerably less, but still significant. Estimate range from 10,000 to 33,000 with 500 to 1000 entering the market every year. These chemicals have become part of our everyday life and, one way or another, many of them find their way into our surface and groundwaters.

The full health import of this explosion of new chemicals, together with other recent discoveries concerning toxicity of naturally occurring substances, cannot readily be assessed because of the shortage of trained toxicologists and laboratories, the painstaking slowness of testing procedures, and the real, though arcane, disputes among scientists as to appropriate risk levels. Even so, much information of toxics is known, and that knowledge can be applied in framing public policy.

b. Haw River and Jordan Lake.

(1) Presence of Heavy Metals and Other Chemicals.

Dr. Rick Maas revealed that his study of data has revealed the presence of heavy metals, such as chromium and cadmium, in the Haw River and the Lake, as well as organic chemicals. Indeed, there is reason to believe that Jordan Lake periodically violates the State's heavy metal standards for at least four metals. Since the Haw flows through an industrialized and urbanized region--there are seventy textile plants with permits to discharge wastes along its banks, not to mention furniture and battery manufacturing plants--this should not be surprising. But it should cause concern.

The Water Resources Research Institute (WRRRI) published "A Survey of Potential Population Exposures to Chemical Contaminants Present in Unprotected Surface Water Supplies in North Carolina" (January 1984). From its general survey across the State, it concluded: "There is the potential for a significant fraction of the State's population to be exposed to chemical contaminants" in trace amounts...Therefore, prudence suggests careful assessment of all contaminants entering surface waters used for water supply." (at 61)

(2) Reliability of data. While some reports found that median concentrations for all heavy metals were within standards, this does not necessarily mean that individually a given chemical is always within standards. Dr. Maas stated that there was some evidence that there were higher chemical amounts in samples taken at night than in the daytime. Time, place, and frequency all affect the reliability of data. And while each individual discharger may be meeting standards, when all of the waste becomes pooled together, serious toxics problems may arise.

The WRRRI in its report mentioned above acknowledged the problem of lack of data: "Currently, little organized information is available to establish a complete chemical profile of each point source of wastewater discharge. Even less is known about the chemicals contributed by non-point sources, such as agricultural and urban runoff." (at iii) An informative paper, "Monitoring for Toxics in the Waters of North Carolina", was presented to the Committee by Dr. David Moreau, Director of WRRRI, at the November 14, 1984 meeting and is included in Appendix C.

2. Responses.

(a) Bioassay techniques. Within the legal and financial constraints within which NRCD must work, it appears that NRCD is making a vigorous response to the detection and regulation of toxics. For instance, NRCD has been a pioneer in the use of bioassay methods of pollution detection--that is the use of test organisms to detect pollution. The United States Environmental Protection Agency has praised this innovation and is recommending it to other states. Combined with the more traditional chemical specific method of detection, bioassay methods are a promising tool for quick detection and analysis.

(b) Personnel. As noted before, time, place and frequency affect both the quantity and reliability of data. Frequent testing is dependent on adequate personnel to staff a well-conceived program. Recent appropriations to NRCD enabled it to hire 14 additional persons in water quality evaluation.

(c) Inventories. Secretary Summers of NRCD noted that NRCD had the authority to require permit holders to disclose to it what chemicals they were using. Some communities, notably Burlington, have urged manufacturers to conduct inventories of chemicals on their premises and disclose that information to appropriate authorities. An inventory requirement allows an assessment of chemicals at the source. This also simplifies the task of identifying chemicals already in the water. Regulators can thereby obtain a more complete picture of the true toxics situation.

1. Definitions

Watershed protection planning is the use of the police power by local governments to enact land-use regulations that will protect the purity and integrity of water resources, especially those from which people draw their drinking water. Instead of waiting for the pollutants and toxic substances to appear in the water and then be cleaned up at great cost, watershed protection planning is a common-sense approach that emphasizes prevention of pollution problems in the first place.

Lately, the local governments have shown increased interest in watershed protection measures. The Triangle J Council of Governments has been especially instrumental in proposing various options, based on its technical and scientific assessments. Some of the major protection devices are the following:

- a. Designation of water quality critical areas (WQCA) in the immediate vicinity of designated lakes or rivers. These WQCA's would be in a larger protected zone, but it would be here that the most stringent regulations would apply.
- b. Limitations on commercial or industrial activity.
- c. Density control, especially through lot size requirements.
- d. Enactment of water and sewer extension policies that discourage overdevelopment. Septic tank regulation.
- e. Limit on percentage of impervious surfaces.
- f. Local erosion ordinances. Buffer requirements.

2. Speakers

For its November 14th meeting, the Committee invited several area planning directors together with other persons with proven expertise and interest in water quality planning. The planning directors were asked what their view was of the role of state government in water quality planning, particular water quality problems they had, opinions on planning devices such as the above, initiatives they may have undertaken, and suggestions they had for improvements. (A sample copy of the letter is reproduced in Appendix D). The following persons spoke at the meeting: Dr. Regina McLaurin*, Chair, Wake County Planning Board; Mr. Ed Holland*, Triangle J Council of Governments; Dr. David Moreau, Director, WRRRI; Dr. Alice Gordon*, Chair, Orange County Planning Board; Mrs. Cindy Bland*, Chair, Chatham County Planning Board; Mr. Rick Honeycutt, Alamance County Planning Director. Also speaking were: Mr. Lynn Featherstone, Haw River Assembly; Mr. Randall Kornegay, Director, Water and Sewer Authority, Burlington; Ms. Margaret Holton*, League of Women Voters; and Mr. Lee Fleming, Director of the Water Quality Section at NRCD. In addition, Ms. Jane Davis*, Council Member of the City of Durham sent materials detailing Durham's initiatives in this area.

3. Initiatives Underway.

While it is not accurate to say that area local governments have enacted comprehensive measures for watershed protection, several have enacted preliminary measures and are contemplating additional ones. Altogether, a good start has been made.

*The asterisk indicates that prepared remarks or materials were submitted. They appear in Appendix D.

One of the most aggressive initiatives is that undertaken by Orange County. Dr. Alice Gordon presented materials (See Appendix D) setting out the present ordinance allowing a "protected Watershed II" designation. In such a district, uses are regulated, stream buffers required, and impervious surfaces restricted. Proposed amendments to the ordinance include designations for Water Quality Critical Areas, protected watershed industrial districts, and various site restrictions. This overlay zoning is intended to protect Orange County drinking water sources such as University Lake and Cane Creek. Orange County is fortunate that its water sources are under its jurisdiction.

Other initiatives that have been undertaken or are being contemplated have been in Wake County (See Ms. McLaurin's remarks, Appendix D); Chatham County (See Mrs. Bland's remarks, Appendix D); and the City of Durham (See Ms. Davis' materials, Appendix D).

4. Issues.

The existence of common water sources but multiple jurisdictions points to the regional nature of water quality problems. Why should one jurisdiction enact stringent regulations if its neighbor does not? Should the State role be one of encouraging voluntary cooperation or should the State enact minimum standards? Or should the State provide comprehensive standards that the local governments must meet? These are vexing and controversial questions. The consensus that seemed to emerge from the meeting is that, while State standards may in the future be necessary, it would be best at this time to rely on voluntary cooperation and initiative and for

the State to provide technical assistance and help in information-sharing. The fact that local governments are moving forward in an effort to solve watershed protection problems is evidence both of good faith and a clear recognition that serious problems face our water resources. The utilization of the planning techniques described above or in the various presentations of participants are clearly part of the answer, whether or not the impetus for their enactment comes from local initiative or, as a second choice, through State standards.

FINDINGS AND RECOMMENDATIONS

Having listened to numerous speakers and considered many pertinent materials, the Committee makes the following findings and recommendations:

Finding 1: The problems of toxic substances in the water is serious and growing. The Committee heard extensive testimony that toxic substances--i.e., poisons in one degree or another--are present in our waters. While innovative efforts are underway, such as NRCD's bioassay procedures, to detect these toxics, more monitoring using both new and traditional techniques needs to be done.

However, detection of toxic substances already in the water is only part of the solution. We need to develop ways--such as industrial inventories of toxic substances--that enable us to know what and where these substances are being introduced. The State should solicit the cooperation of the private sector to solve the toxics problem in a nonadversarial way to the extent possible and desirable.

Regulatory flexibility is also needed: The current tie-in between North Carolina water quality standards to federal standards is outmoded and dysfunctional.

Recommendations:

- (1) The General Assembly should continue and expand its funding for toxics monitoring. (See Appendix E).
- (2) The General Assembly should initiate a program of technical assistance to assist the private sector in ways of detecting and reducing toxics.

(3) The General Assembly should consider a requirement that industries compile inventories of hazardous chemicals to be made available to regulators as a method to improve toxic substance detection.

(4) The General Assembly should repeal GS 143-215(c) as set out in Appendix F.

Finding 2. Watershed protection planning is essential to the solution of the toxics and other pollution problems.

In particular, the Committee would like to commend the Triange J Council of Governments for its vigorous efforts in analyzing the problems and recommending solutions. Unfortunately, Triangle J's program, so useful as a catalyst, is facing a funding cutoff from the federal government and the Piedmont Triad Council of Governments would like to start a water resources program for its own area. These two Councils of Governments would geographically include virtually the entire Haw basin.

The Committee would also like to commend NRCD for its assistance to local governments for water quality planning. NRCD has actively contacted and coordinated with local governments on these issues and has made staff available to assist them. The Committee recommends that this momentum continue.

Encouragingly, we have observed several local governments moving toward watershed protection planning. Watershed protection has regional implications, but, if there is dialogue, information-sharing, technical assistance, and cooperation, the solution can be local.

Recommendations:

- (5) The General Assembly should fund Triangle J and Piedmont Triad's Water Resources program to facilitate the continuation of the voluntary development of watershed protection planning. (See Appendix G for details).
- (6) The General Assembly should continue to explore the possibility of the option of developing minimum State standards for water quality protection and the establishment of water quality critical areas should local and voluntary efforts be insufficient.
- (7) The General Assembly should consider the desirability of setting up an advisory committee similar to the one now existing for the Neuse River to foster communication and voluntary cooperation.

Finding 3. The problem of nutrient loading, especially phosphates, remains acute. In its Interim Report, the Committee supported a Clean Detergent Bill which would substantially reduce phosphate levels at a cheaper relative cost while heightening environmental awareness in the public with no major drawbacks. The Committee reiterates its support of a Clean Detergent Bill.

Also, the Committee commends NRCD's Nutrient Sensitive Watershed Program, which is already attacking the nutrient loading problem in three watersheds. Of particular interest are the encouragement in the agricultural sector of Best Management Practices (BMP) to mitigate nutrient runoff, and the cost-share program which helps to defray otherwise a onerous private costs for the greater

public benefit.

Recommendation:

(8) The General Assembly should pass a Clean Detergent Act as set out in Appendix H.

(9) The General Assembly should continue and expand the Nutrient Sensitive Watershed program.

(See Appendix H).

Finding 4. The problem of financing water and waste facilities in this State needs urgent attention. The Committee heard testimony that many communities in this State face water and sewer moratoriums because of inadequate facilities. At the same time, the federal government is phasing out its program of assistance - assistance has declined \$110 million in 1976 to only \$42 million in 1984 and the effective rate of federal match is now only between 35% and 45%. Funds available under the State Clean Water Bond program are now exhausted, leaving local government to bear the full cost of the non-federal share.

Recommendation:

(10) The General Assembly in 1985 should aggressively seek solutions to the local government water and sewer capital needs. (See Appendix I for information concerning alternatives presented by the Water Resources Subcommittee of the State Goals and Policy Board.)

Finding 5. It is essential to keep up the momentum for creative solutions to water quality problems. Along with other water quality committees, this Committee has been part of an educational process about the water quality problems of the State.

Part of this State's long-range plan should be to eliminate all toxic discharges into the watersheds from which drinking water is drawn. This requires a multi-level approach. Much of the inspiration for it must come from the legislative level--from those who have been elected to lead.

Recommendation:

(11) The General Assembly should reauthorize this Study.

APPENDIX A

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 1983
RATIFIED BILL

CHAPTER 905
HOUSE BILL 1142

AN ACT AUTHORIZING STUDIES BY THE LEGISLATIVE RESEARCH COMMISSION
AND BY THE COMMISSION ON CHILDREN WITH SPECIAL NEEDS AND MAKING
TECHNICAL AMENDMENTS RELATING THERETO.

The General Assembly of North Carolina enacts:

Section 1. The Legislative Research Commission may study the topics listed below. Listed with each topic is the 1983 bill or resolution that originally proposed the study and the name of the sponsor. The Commission may consider the original bill or resolution in determining the nature, scope and aspects of the study. The topics are:

- (1) Continuation of the Study of Revenue Laws (H.J.R. 16 - Lilley); and the ramifications, if enacted, of H.B. 746, Appraisal of Subdivided Tract (Auman) and H.B. 1250, No Intangible Tax/Income Surtax (Auman),
- (2) Continuation of the Study on the Problems of the Aging (H.J.R. 44 - Economos; S.J.R. 16 - Gray),
- (3) Continuation of the Study on Insurance Regulation (H.B. 63 - Seymour) and Insurance Laws and Regulation of Insurance Industry (H.B. 1243 - Hightower),
- (4) Teaching of Computer Literacy in the Public Schools and Community Colleges (H.J.R. 191 - Berry) and the Continuation of Study of College Science Equipment (H.J.R. 898 - Enloe),
- (5) Adequacy of State Management of Large-Scale Land Clearing and Peat Mining (H.J.R. 220 - Evans),
- (6) Adequacy of Existing Water Pollution Control Programs to Improve and Protect Water Quality in the State (H.J.R. 232 - Evans),
- (7) Marketing of Seafood by Fishermen (H.J.R. 896 - Chapin),
- (8) Continuation of Study on the Economic Social and Legal Problems and Needs of Women (H.J.R. 904 - Easterling; S.J.R. 329 - Marvin),
- (9) Regulation of Nonpublic and Public Post-Secondary Educational Institutions (Joint Resolution 33 (H.J.R. 988 - Thomas)),
- (10) Readable Insurance Policies (H.B. 1069 - Ballance),
- (11) State Government Risk Management (H.J.R. 1083 - Seymour),
- (12) Biotechnology Development (H.B. 1122 - Etheridge, Bobby and H.J.R. 1282 - Etheridge, Bobby; S.J.R. 620 - Hancock),
- (13) Continuation of Study of the State's Interest in Railroad Property (H.B. 1142 - Hunt),
- (14) Restricting Driving by Minors (H.J.R. 1149 - J. Jordan),

- (15) Health Professionals (H.J.R. 1194 - Diamond),
- (16) Water Quality in Haw River and B. Everett Jordan Reservoir (H.J.R. 1257 - Hackney),
- (17) Regulation of Alcoholic Beverages on State Property (H.J.R. 1292 - Clark),
- (18) Disposition of Animals by Animal Shelters and Pounds (H.J.R. 1309 - Stamey),
- (19) Boards, Commissions, and Councils in the Executive Branch (H.J.R. 1321 - Hunt),
- (20) Feasibility of a Food Distribution Facility on Dix Farm Property in Raleigh (H.J.R. 1334 - James),
- (21) Implementation of Identification and Labelling of Toxic or Hazardous Substances as Proposed by House Bill 1339 (Payne),
- (22) Water Resources Issues Involving North Carolina and Virginia (H.J.R. 1404 - Church),
- (23) Investment Guidelines for Eleemosynary Institutions and Funds (H.J.R. 1423 - Musselwhite),
- (24) Child Support Collection Procedures (H.J.R. 1439 - Easterling; S.J.R. 675 - Woodard, W.),
- (25) Contamination of Unpackaged Foods (H.J.R. 1441 - Stamey),
- (26) Legislative Communications Confidentiality (H.R. 1461 - Miller),
- (27) Continuation of the Study of Information Processing Resources in State Government (S.J.R. 44 - Alford),
- (28) Regulation and Taxation of Banks, Savings and Loans and Credit Unions (S.J.R. 381 - Edwards of Caldwell),
- (29) District Attorney Standards (S.B. 496 - Hipps),
- (30) Cost of Providing Attorneys and Guardians Ad Litem to Indigents (S.J.R. 643 - Swain),
- (31) Public Health Facility Laws (S.J.R. 656 - Hancock), and Review of Certificate of Need Procedures (H.J.R. 1294 - Economos),
- (32) Life Care Arrangements (S.J.R. 657 - Hancock),
- (33) Worthless Checks (S.J.R. 661 - Thomas of Henderson),
- (34) State-owned Rental Housing as contained in Section 2 of this act,
- (35) User Fees at State-owned Facilities, as contained in Section 3 of this act,
- (36) Motorboat Titles and Liability Insurance, as contained in Section 4 of this act,
- (37) Motor Vehicle Inspection Program, as contained in Section 5 of this act,
- (38) Continuation of the Study of Day Care (H.J.R. 594 - Colton),
- (39) Continuation of the Study on Twelfth Grade (H.J.R. 753 - Mauney; S.J.R. 343 - Tally),
- (40) Procedure for Incorporating Municipalities (S.J.R. 445 - J. Edwards),
- (41) Solar Law (S.J.R. 670 - Walker),

- (42) Statutory Liens (S.J.R. 680 - Edwards of Caldwell),
- (43) In-service Training of Teachers in North Carolina History, the American Economic System, Free Enterprise Concepts, and Legal Topics (H.B. 1281 - Foster).

Sec. 2. State-owned Rental Housing. (a) The Legislative Research Commission is authorized to conduct a study of all State-owned rental housing during the 1983-84 fiscal year and to recommend a comprehensive statewide rental policy, to be administered by the Department of Administration, to the 1984 Session of the General Assembly. This study shall be conducted in consultation with the department that owns the housing. In conducting this study, the Commission shall first determine the amount of nonessential rental housing currently owned by the State using the following criteria: The geographic location of the State property on which the housing is located and its proximity to alternative privately owned housing; the amount of time that would be required for employees to arrive at the State property on which housing is now located in the event of an emergency; the amount of security necessary for State property that is now being provided by State employees living in State-owned rental housing; and any other benefits to the State for employees to occupy said housing: The Commission shall recommend the disposition of nonessential rental property by one of three means: sale of the housing and property on which it is located; sale of the housing unit only with the stipulation that the house be removed from State property; and conversion of the housing unit to an alternative use.

(b) It is the policy of the State of North Carolina that the State provide rental housing only in cases in which an essential State purpose is served. Nothing in these sections shall be construed to mean that State departments may not continue to divest themselves of nonessential rental housing during the course of the Legislative Research Commission study.

Sec. 3. User Fees. The Legislative Research Commission is authorized to study the potential for user charges and admission fees at State-owned cultural, recreational and historical facilities. The study may cover museums, historic sites, marine resource centers as well as other facilities. The Legislative Research Commission may make an interim report to the 1984 Regular Session of the 1983 General Assembly and may make a final report to the 1985 General Assembly.

Sec. 4. Motorboat Titles and Liability Insurance. The Legislative Research Commission of the General Assembly is authorized to study the issue of motorboat titles and liability insurance. The study may include start-up and administrative costs, potential revenues, phase-in plans, financial institution requirements, etc. The Commission may report to the 1984 Session.

Sec. 5. Motor Vehicle Inspection Program Study. The Legislative Research Commission may study the effectiveness of the motor vehicle inspection program required by Article 3A of Chapter 20 of the General Statutes. The study may consider, among other aspects, the impact on highway safety, cost

effectiveness of the program, and probable impact of eliminating part or all of the program.

Sec. 6. For each of the topics the Legislative Research Commission decides to study, the Commission may report its findings, together with any recommended legislation, to the 1984 Session of the General Assembly or to the 1985 General Assembly, or the Commission may make an interim report to the 1984 Session and a final report to the 1985 General Assembly.

Sec. 7. G.S. 120-30.17 is amended by adding two new subsections to read:

"(7) to obtain information and data from all State officers, agents, agencies and departments, while in discharge of its duty, pursuant to the provisions of G.S. 120-19 as if it were a committee of the General Assembly.

(8) to call witnesses and compel testimony relevant to any matter properly before the Commission or any of its committees. The provisions of G.S. 120-19.1 through G.S. 120-19.4 shall apply to the proceedings of the Commission and its committees as if each were a joint committee of the General Assembly. In addition to the other signatures required for the issuance of a subpoena under this subsection, the subpoena shall also be signed by the members of the Commission or of its committee who vote for the issuance of the subpoena."

Sec. 8. Section 1 of Chapter 1372, Session Laws of 1981, is amended by deleting "as authorized in Section 2 of Resolution 61, Session Laws of 1981".

Sec. 9. Section 1(3) of Chapter 1372, Session Laws of 1981, is amended by deleting "1983 Session", and inserting in lieu thereof "1983 and 1985 Sessions".

Sec. 10. G.S. 124-5 is amended by deleting "June 1, 1983", and inserting in lieu thereof "the date of convening of the 1985 Regular Session of the General Assembly".

Sec. 11. The last sentence of G.S. 124-5 is amended by deleting "11-month period", and inserting in lieu thereof "period ending on convening of the 1985 Regular Session."

Sec. 12. Deaf/Blind School Move--Commission on Children with Special Needs. (a) The Commission on Children with Special Needs, established by Article 12 of Chapter 120 of the General Statutes, may study the issue of transferring the State schools for the Deaf and the Governor Morehead School for the Blind to the jurisdiction of the State Board of Education.

(b) The Commission may make a final report to the Second Session of the 1983 General Assembly. (H.J.R. 246 - Fenner)

Sec. 13. Bills and Resolution References. The listing of the original bill or resolution in this act is for references purposes only and shall not be deemed to have incorporated by reference any of the substantive provisions contained in the original bill or resolution.

Sec. 14. This act is effective upon ratification.
In the General Assembly read three times and ratified,
this the 21st day of July, 1983.

JAMES C. GREEN

James C. Green
President of the Senate

LISTON B. RAMSEY

Liston B. Ramsey
Speaker of the House of Representatives

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 1983

HOUSE JOINT RESOLUTION Bill 1257

Sponsors: Representatives Hackney; Barnes, Cook, McDowell, Holt,
McAlister, Wicker, Miller.

Referred to: Rules and Operation of the House.

June 10, 1983

1 A JOINT RESOLUTION TO AUTHORIZE THE LEGISLATIVE RESEARCH
2 COMMISSION TO STUDY THE QUALITY OF THE WATER IN THE HAW RIVER
3 AND JORDAN RESERVOIR.

4 Whereas, the Haw River, which flows through or is formed
5 from tributaries in Forsyth, Rockingham, Guilford, Alamance,
6 Orange and Chatham Counties, is one of the most important and
7 beautiful resources in central North Carolina; and

8 Whereas, the Haw River joins to the Deep River to form
9 the Cape Fear River which supplies water and recreation for many
10 eastern North Carolina communities; and

11 Whereas, the Haw River has become polluted over the
12 years and remains badly polluted by industrial discharges,
13 municipal wastes, and many other point and non-point sources; and

14 Whereas, despite the declaration of public policy of the
15 State contained in G.S. 143-211, ("to achieve and to maintain for
16 the citizens of the State a total environment of superior
17 quality"), and despite the vesting of jurisdiction in the
18 Department of Natural Resources and Community Development to
19 prosecute violators of water classification standards, serious
20 problems in its water quality remain to be remedied; and

1 Whereas, the Haw River provides the sole supply of water
2 for consumption by the citizens of the Town of Pittsboro in
3 Chatham County; and

4 Whereas, the Haw River flows directly into the newly
5 constructed and filled Jordan Reservoir, which lies principally in
6 Chatham County; and

7 Whereas, the quality of water in the Haw River has a
8 direct and certain impact on the quality of water in the Jordan
9 Reservoir, and the quality of life in the entire region;
10 Now, therefore, be it resolved by the House of Representatives,
11 the Senate concurring:

12 Section 1. The Legislative Research Commission is
13 authorized to study the quality of water in the Haw River and the
14 Jordan Reservoir. The study shall include but not be limited to
15 specific plans for upgrading water quality standards from present
16 classifications; specific plans for eliminating the most
17 significant point sources of water pollution in the Haw River
18 basin; an aggressive plan of criminal and civil prosecution of
19 known violators of the discharge permits now in existence, or of
20 the upgraded water quality standards to be established in the
21 future; a review of municipal pretreatment requirements for
22 industrial wastes, for municipal and county sewage treatment
23 plants which discharge into the Haw River or one of its
24 tributaries, and plans for any necessary upgrading of those
25 standards.

26 Sec. 2. The Commission is authorized to report its
27 findings and recommendations, together with legislation that

28

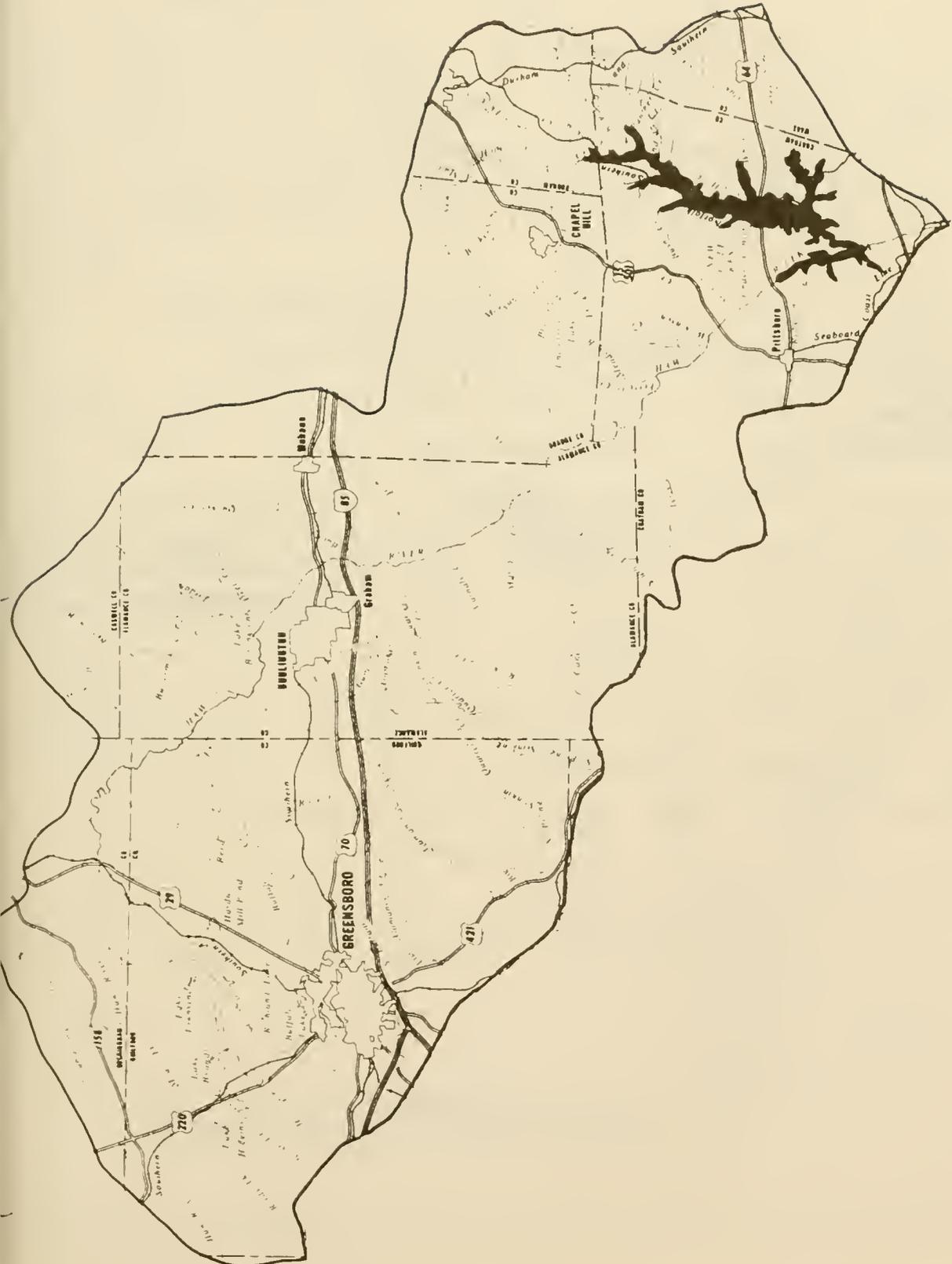
1 would implement its recommendations, to the 1984 Session of the
2 1983 General Assembly or to the 1985 General Assembly; or the
3 Commission may make an interim report to the 1984 Session of the
4 1983 General Assembly and a final report to the 1985 General
5 Assembly.

6 Sec. 3. This resolution is effective upon ratification.

7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

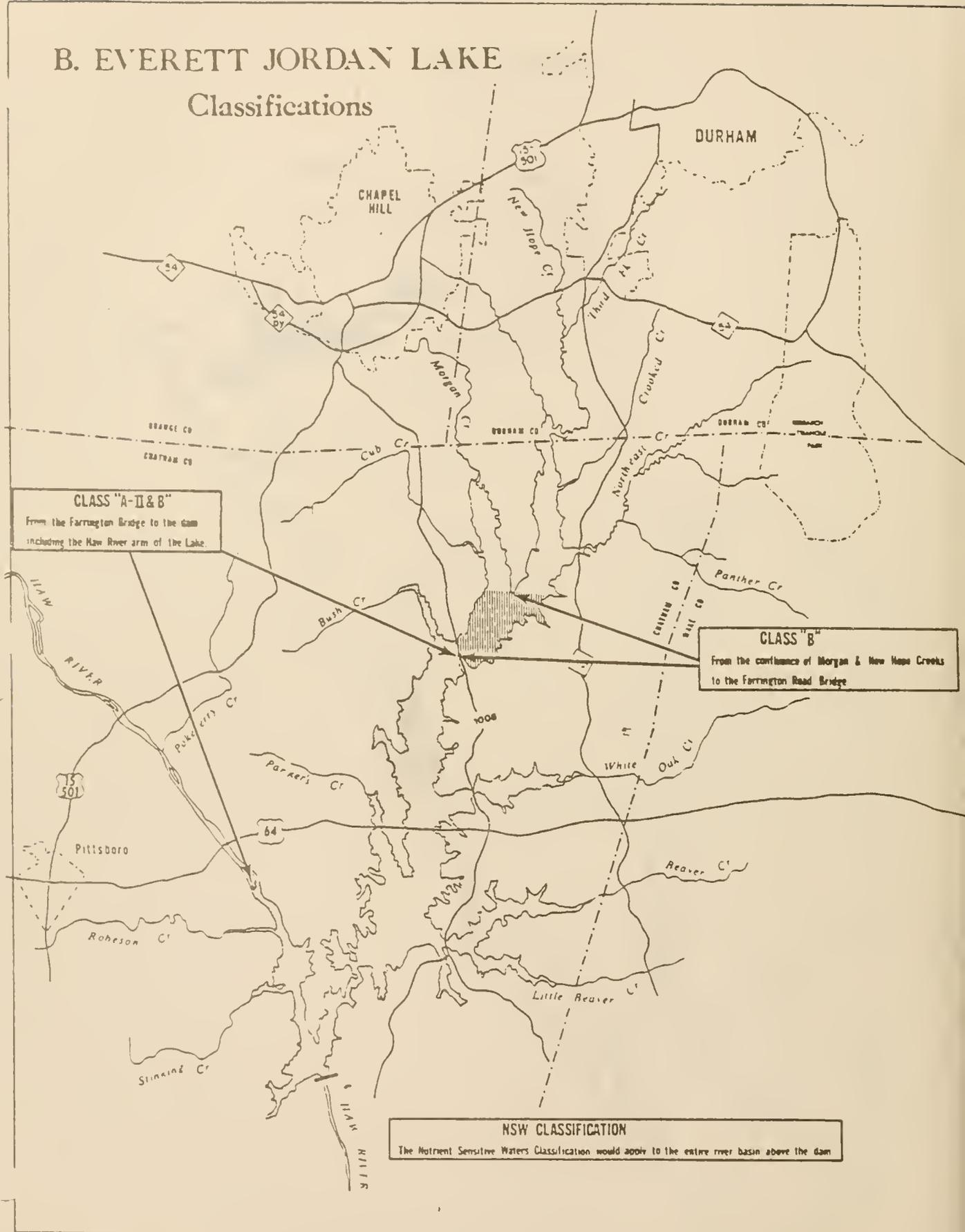
APPENDIX B

HAW RIVER BASIN



B. EVERETT JORDAN LAKE

Classifications



CLASS "A-II & B"
 From the Farrington Bridge to the dam
 including the Haw River arm of the Lake.

CLASS "B"
 From the confluence of Morgan & New Hope Creeks
 to the Farrington Road Bridge

NSW CLASSIFICATION
 The Nutrient Sensitive Waters Classification would apply to the entire river basin above the dam

A. Geography

1. Haw River

Draining over 1695 square miles, the Haw River is a major Piedmont North Carolina system tributary both to Jordan Lake and the Cape Fear River. Its watershed includes large parts of Alamance, Chatham, Guilford, and Rockingham Counties. These areas are among the most urbanized in the State and contain such major metropolitan centers as Greensboro, Burlington, Graham, Chapel Hill and Durham.

2. Jordan Lake

Located south of Durham and Chapel Hill and west of Raleigh, Jordan Lake has been embroiled in controversy almost since its inception. Conceived as flood control for downstream communities and touted for its recreational benefits, the Lake was built by the Corps of Engineers. Although the Department of Natural Resources and Community Development (NRCD) gave it a qualified A-II water quality designation, suitable for drinking, it delayed actual water withdrawal authority because of concern of its immediate suitability for that purpose. The Haw is a major tributary to the Lake, and pollution in the Haw is quite literally carried forward into it.

APPENDIX C

AGENDA

HAW RIVER AND JORDAN RERSERVOIR WATER QUALITY STUDY COMMITTEE

October 26, 1984

- I. Call to Order
- II. Review and Approval of Budget
- III. Review of Legislative Research Commission Rules
- IV. Outline of Federal and State Laws on Toxics--Mr. Daniel Long, Committee Counsel.
- V. Speakers
 - Mr. Rick Maas, NCSU Water Quality Evaluation Project
 - Mr. Robert Helms, Director of Division of Environmental Management, NRCD
 - Mr. Lee Fleming, Director of Water Quality Section, Division of Environmental Management, NRCD
 - Mr. Bill Hevener, North Carolina Citizens for Business and Industry, Environmental Concerns Committee
- VI. Committee Discussion
- VII. Instructions to Staff
- VIII. Selection of Next Meeting Date
- IX. Adjournment

HAW RIVER AND JORDAN RESERVOIR WATER QUALITY STUDY COMMITTEE
October 26, 1984

OUTLINE OF FEDERAL AND STATE LAWS CONCERNING TOXICS

I. Introduction

A. Definition

1. Precise wording of definitions differs, but central idea is that a toxic is a poison to some degree and harmful to human health or to the environment or both.
2. More precisely, "toxic" has been associated with substances which, directly or indirectly, cause death, disease, behavior abnormalities, cancer, genetic mutation, physiological malfunctions, or physical deformities. (See, e.g., G.S. 143-213(18))

B. Uncertainty problems: The challenge to public policy

1. Sheer number of chemicals

- a. Estimates vary widely. Estimated that 4 million chemicals have been invented since 1800, with about 3 million of those since 1945. Commercial use considerably smaller but still significant. Estimates range from 10,000 to 33,000 overall, with 500 to 1000 new ones annually.

2. Shortage of trained toxicologists

3. Time, expense and reliability of tests

- a. Some estimates as to animal tests: \$70,000 and consuming three years.
- b. Advancing detection technology and the problem of determining risk and therefore reportable quantities. Many arcane disputes. Task of public policy is to make decisions even in the face of uncertain scientific information.

II. Federal laws

A. Clean Water Act (33 USC 1251 et seq.)

1. Regulates pollutant types and technology requirements

- a. Conventional pollutants (e.g., biological oxygen demanding pollutants, suspended solids etc.) require BCT (i.e., Best Conventional Pollutant Control Technology).

b. Nonconventional and toxic pollutants require BAT (Best Available Technology)

- (1) Toxic examples: The 65 chemicals listed in 33 USC 1371. Note also the 129 Priority Pollutants.
- (2) EPA imposes effluent limitations and new source performance standards for 21 major industries and has option to impose more stringent limitations based on "ample margin of safety standards."

B. Toxic Substances Control Act (15 USC 2601 et seq.)

1. Aims

- a. Develop data base on environmental effects of chemicals with primary responsibility for testing on industry.
- b. Invest government with authority to prevent unreasonable risks.
- c. Not impede technological innovation or create unnecessary economic burdens.

2. General requirements.

- a. **Tests.** EPA may require manufacturers to test chemicals for which there is insufficient data and may present an "unreasonable risk."
- b. **Notice.** Manufacturer must give EPA notice before manufacturing new substances and submit data.
- c. **Risk.** Applies to all chemicals, not just new. If EPA finds a reasonable basis for concluding that substance presents unreasonable risk, it may apply restrictions.

3. Progress: Slow

- a. EPA has compiled an inventory but preliminary assessments have taken a long time.

C. Hazardous Waste laws

1. Resource Conservation and Recovery Act (RCRA; 42 USC 3251 et seq.)

- a. Sets up EPA system of standards, permits and manifest requirements.
- b. Recent amendments extended coverage to small waste producers (from 2200 lbs./mo. to 220). Called "Rita" after Rita Lavelle for her role in galvanizing the passage of these amendments.

2. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA; 42 USC 9601)--Superfund

D. Recent federal enactment: Groundwater Protection through LUST

1. Congress gave EPA authority to set gasoline storage tank standards. Standards to be set are for soundness of construction and monitoring.
2. GAO had surveyed 20 states and 9 had reported that the worst culprit for groundwater pollution was leaking underground storage tanks (LUST).

III. North Carolina laws

A. "Regulatory"

1. Oil and Hazardous Substances Control Act (GS 143-215.75)
2. Water and Air Resources (143-211)

B. Criminal

1. Contaminated public water systems (G.S. 14-159.1)
2. Dumping toxic substances (G.S. 14-284.2)
 - a. Sets out specific heavy metals and halogenated hydrocarbons (Mercury, plutonium, selenium, thallium, uranium, PCB, kepone)

IV. Conclusions on toxics

- A. Increasing in size with number of new chemicals and discoveries regarding hazards of both natural and synthetic chemicals.
- B. Definitely increasing in public awareness and concern
- C. Undoubtedly a legislative responsibility to frame appropriate laws to protect the public health and safety.

STATEWIDE TOXICS PROGRAM
IN NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES &
COMMUNITY DEVELOPMENT

DIVISION OF ENVIRONMENTAL MANAGEMENT

OCTOBER 26, 1984

PRESENTED TO: THE HAW RIVER LEGISLATIVE
STUDY COMMISSION

STATEWIDE TOXICS PROGRAM IN NORTH CAROLINA

Today I would like to briefly review for this committee the history of our toxics program in North Carolina, our current status, and the future directions we hope to take this very instrumental program.

Our first efforts in dealing with toxic effluents began in 1981. At that time, biologists with the Division began to use static bioassay procedures to evaluate effluent toxicity. Yet at this time no funds were specifically directed in support of this effort. Fish were reared in ice coolers and were stored in closets. Yet it was evident that such evaluations were necessary to more effectively address the water quality issues in our State.

In 1982-83 funds, made available through the State Pretreatment Program appropriations and internal re-organization, allowed for the establishment of an aquatic toxicity program within the Division. It was then that the toxicity program, as we know it, began to affect our other programs. Prior to the 1984 Short Session of the General Assembly, four staff were directing their activities in the toxics area, and the Division was producing about 6 person years effort in this area.

The work accomplished during these years reiterated the need for an expansion of this effort. It was demonstrated that numerous discharges were toxic and issues, such as Biocides, were raised requiring regulatory actions.

The 1984 General Assembly responded to the request of the Department and the concerns of the citizens of the State by providing fourteen (14) positions and support funds for the Statewide Toxics Program in July of this year (\$550,272 appropriated). Currently 11 of the 14 positions have been filled and the remaining 3 are expected to be filled by early November.

The question has been asked as to the position of EPA concerning toxics. With that in mind, I would like to discuss this as well as the application of our toxics program within the Division.

Currently within EPA only 2 of 10 regions are equipped with full bioassay testing capabilities. Even with its limitations the chemical by chemical

approach is being employed by EPA even though criteria and guidelines have only been established for 65 of the 129 principle priority pollutants, which are only a small fraction of the thousands of compounds being used today.

In the Federal Register dated Friday, March 9th, 1984, EPA issued a national policy statement entitled "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants." It is evident that the EPA is making toxicity evaluations a high priority within the national programs.

The EPA is recognizing North Carolina as possibly the lead State in the Country concerning toxicity evaluations and our approach is being used as an example at EPA seminars being conducted throughout the U.S. concerning toxics. I quote from a recent letter from Marha Prothro, Director of the Permits Division of EPA headquarters, "My staff has told me of the excellent work conducted by you and your staff during the recently completed Deep River project. I commend the North Carolina Division of Environmental Management for its continuing emphasis on toxicity assessment and control, particularly because this effect is also a high priority for the Permits Division." The EPA strongly supports North Carolina's work in water quality-based toxics control and I wish you continued success in this endeavor."

Now I would like to review:

The Application of Bioassay Methods by the Department of Natural Resources & Community Development to State Waters

During past years the treatment, and therefore compliance activities, of wastewater effluents has primarily focused on conventional pollutants such as BOD, COD, solids and bacteria.

Effluent limitations have primarily been developed employing technology-based approaches. The technology-based approach involves uniform effluent limitations on an industry-wide approach. Such limitations are developed from effluent guidelines (BPT, BAT, BCT, NSPS and BPJ) and do not consider water quality impacts on any particular water body.

Whereas, these approaches have been very beneficial in protecting our aquatic resources, they are limited and do not adequately address the issue of toxic pollutants.

During recent years, emphasis has increased concerning the treatment and control of toxic pollutants. Section 101(a)(3) of the Clean Water Act states: "it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited". Sections 308 and 402 of the CWA also addresses toxics. The existing water quality standards of North Carolina specifically addresses this issue in .0208 and .0211 and increased emphasis on toxicity is included in the proposed water quality standards.

Thus, both Federal and State legislation and regulations have provided impetus for this important increase in emphasis concerning toxics.

There are two approaches for the assessment and control of toxic pollutants and include chemical specific techniques and whole effluent techniques. Naturally each approach has Advantages and Disadvantages.

Advantages of Chemical Specific Techniques

- 1.) Treatment systems are more easily designed to meet chemical requirements.
- 2.) Chemical analyses, in simple cases, can be less expensive than toxicity testing.
- 3.) Specific problem chemicals can be directly limited.

Disadvantages of Chemical Specific Techniques

- 1.) All toxicants in complex wastewaters may not be identified and, therefore, control requirements for each could not be established.
- 2.) The bioavailability of the toxicants at the discharge site are not assessed and the interactions between toxicants are not measured or accounted for.

Advantages of Whole Effluent Techniques

- 1.) The aggregate toxicity of all constituents in a complex effluent is measured.
- 2.) The bioavailability of the toxic constituents is assessed and the interactions of constituents are measured.
- 3.) Directly measures the response of living organisms.
- 4.) More cost effective in assessing complex wastewaters.

Disadvantages of Whole Effluent Techniques

- 1.) Effluent toxicity treatability data are lacking.
- 2.) Permit holders are not familiar with the techniques.

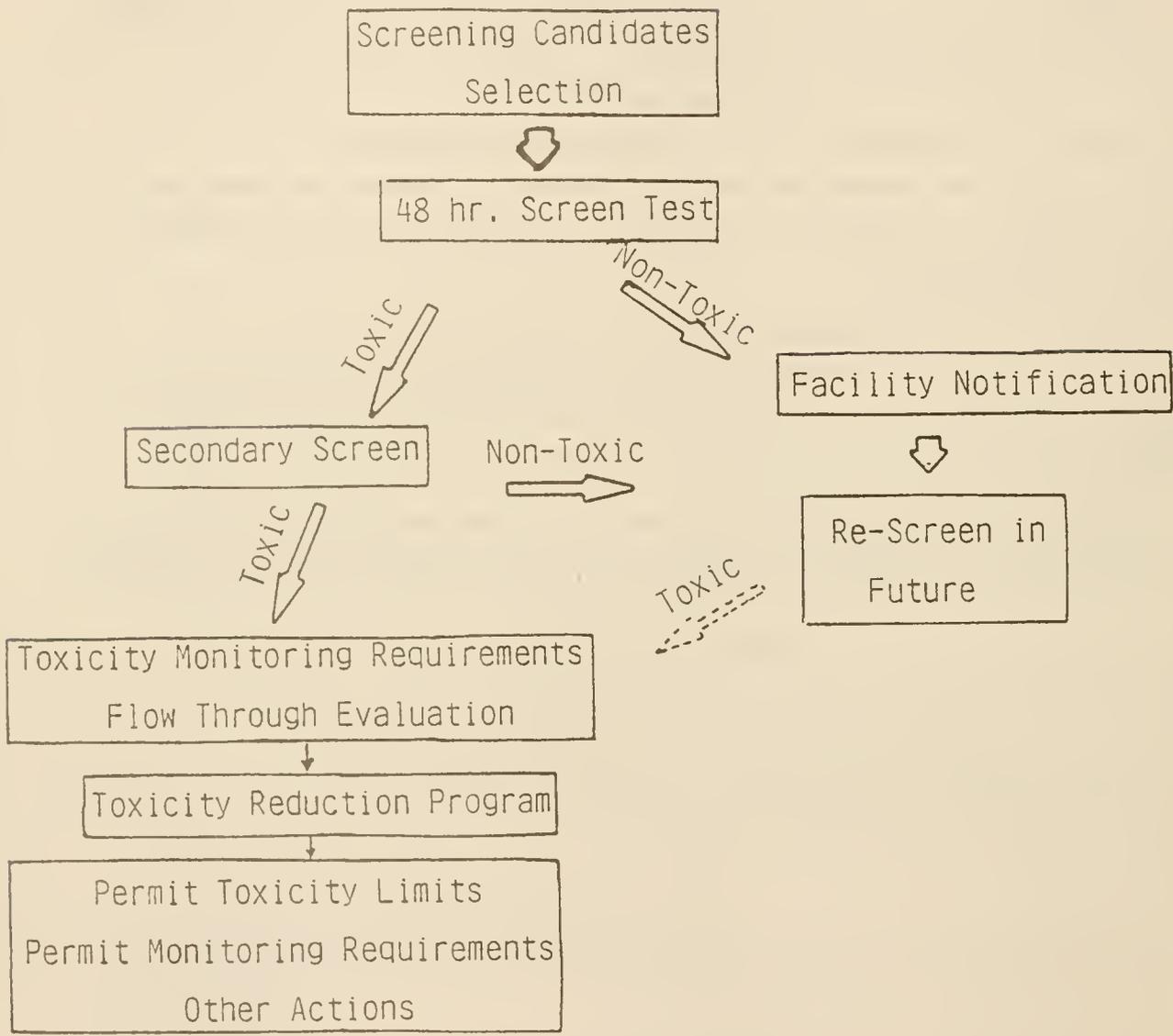
With the thousands of compounds being used today, and new compounds being developed each year it is essential that a combination of the two approaches be employed to assess and control effluents to enable protection of our aquatic resources.

The use of bioassay and biological testing and evaluations have become an integral component of the environmental regulatory program in North Carolina. The employment of these assessment techniques has provided results that are both alarming, due to the severity of problems we have encountered, yet encouraging at the same time, as the facilities have been very cooperative and toxicity reduction or elimination has been accomplished at numerous facilities.

To date 194 individual tests have been conducted at 133 facilities. There have been 89 tests conducted at municipal facilities with 45% indicating toxicity and 105 tests conducted at industrial discharges with 70% indicating toxicity.

I would now like to review the overall strategy employed by the Division of Environmental Management to conduct our toxics Bioassay/Compliance program.

Decision/Action Flow Schematic



The initial phase of the strategy is the determination of those facilities which are to be designated for toxicity screening. Such designations are a result of non-compliance, fish kills, complaints, operational problems, industrial category, and indirect discharge receipts. The potential candidates are established on a priority basis and reviewed monthly by staffs of the central and regional offices.

Next, the actual screening toxicity test is accomplished by collecting 24 hour composite effluent samples and then performing a 48 hour toxicity screen test using either Daphnia pulex (water-flea) or Pimephelas promelas (fathead minnow).

Based on the results of the screening tests, decisions are then made as to the type of follow-up actions or activities required. In all cases where screening tests are performed, notification is transmitted to the subject facility indicating the test results and intentions for future actions by the Division. If toxicity is evident, this notification alerts the discharger that steps should be taken to determine the causes of the wastewater toxicity.

The next step is to identify and prioritize those facilities that require additional toxicological evaluations. Factors that influence this prioritization include: level of toxicity; volume of discharge; size of the receiving stream; and designated uses of the receiving stream.

Follow-up actions may be additional screening by the Division, required toxicity monitoring by the discharger or an on-site intensive flow-through toxicological evaluation.

Flow-through evaluations are 96 hour LC_{50} toxicity determinations of the whole effluent under continuous renewal conditions. This evaluation is accomplished with the use of a mobile bioassay laboratory. Normally, such an evaluation involves six consecutive days of toxicological, biological and chemical data collections and evaluations. It is the intent of this evaluation to not only determine toxicity, but to evaluate and specify the potential causative agents of toxicity in the wastewater. Upon data analysis, data review, and interpretation, a final report is prepared to detail the findings of the investigation.

In those cases where toxicity is confirmed, specific positive actions for correcting the problem are required. This includes toxicity reduction/elimination procedures within a reasonable time frame, establishment of toxicity permit limitations and permit monitoring requirements for toxicity to ensure compliance and protection of the receiving waters.

I would like to briefly overview some of our toxics evaluations that have been accomplished within the Haw River Basin. Within our aquatic bioassay program we have conducted approximately 194 tests statewide on 133 facilities. Fifteen % of this work has been accomplished with the Haw Basin and 33% of this work has been in the Cape Fear Basin itself. Twenty facilities have been evaluated for toxicity in the Haw drainage with 11 of these facilities indicating toxic conditions. We are currently working with each of these facilities to eliminate their toxic constituents. The Haw River system drains 1695 square miles of the piedmont sector of the state and has 107 permitted discharges entering the system and under low flow conditions a majority of the flow is wastewater. This system is of extreme importance in our program and work is continuing to address the potential and known toxics problems in this system.

So what does the future hold for the Toxics Program in North Carolina and what are our immediate needs? We feel the toxics program to be one of the most effective means of protecting our aquatic resources that has been employed. Yet, there are several needs and areas that should be included and expanded.

The Department has submitted an expansion request to the General Assembly for the biennium budget of \$800,000. These funds would support 30 positions to expand our toxics program and provide support for this program.

Our work to date shows a great need to expand our efforts in several areas:

Effluent Toxicity Evaluations: To date 133 individual facilities have been evaluated for toxicity and 60% of those tested have exhibited some degree of toxicity. With over 2700 facilities statewide with discharge permits, it is evident that we must expand our efforts in determining which discharges are toxic and begin our toxicity elimination efforts at those facilities.

Cumulative and Additive Impacts: There are many streams in the state that have multiple dischargers located along the stream. As found in our evaluations of the Deep River, toxic effects are not necessarily mitigated by dilution, but rather, in some instances, are additive and result in more severe toxicity when multiple discharges enter a common water body. There are potentially numerous other areas that require similar evaluations.

Drainage Area Evaluations: The Division has taken the approach of going beyond just looking at a single discharge. We are evaluating whole drainage areas. To allow recovery of these systems with multiple discharges it is necessary to address all the discharges in that area to see beneficial results.

Toxicity/Reduction/Elimination Procedures: As we find problem situations at discharging facilities, we must be in a position to offer guidance relating to procedures necessary to detect the problem effluent constituents, as well as the mechanisms necessary to eliminate or treat those constituents. At the facilities evaluated to date, this has been the request most encountered and must be a priority by the Division to assist in toxicity elimination.

Other areas of equal importance are:

Compliance activities;

Instream toxicity evaluations;

Analytical support;

Chemical toxicological database development;

Chronic toxicological evaluations;

Human health assessments;

and especially determination of the suitability and safety of drinking water supplies and reclassifications of uses of water bodies.

So, as you can see, we have a very good and effective frame work started for a Statewide toxics program. Yet for it to be effective and to accelerate the elimination of toxics, we still must strive to increase and expand our efforts.

HALL RIVER - JORDAN RESERVOIR WATER QUALITY
LEGISLATIVE RESEARCH COMMITTEE

Mr. Chairman, Committee members, my name is Bill Hevener. I am Region Environmental Affairs Manager for the Weyerhaeuser Company. I am speaking today on behalf of the North Carolina Citizens for Business and Industry Environmental Concerns Committee. NCCBI's membership is comprised of approximately 1,600 corporations and businesses that are located or do business in North Carolina. The Environmental Concerns Committee participates in legislative and regulatory matters concerning the environment on behalf of the membership of NCCBI.

Industry abhors the concept of illegal dumping or discharge of hazardous substances. This illegal activity not only causes environmental harm, but threatens the good name of responsible industry and business. After all, most wastes and toxic materials are the result of an industrial process so we are automatically "guilty by association". Those of us who try very diligently to meet environmental regulations and comply with the numerous statutes and environmental policies of State and Federal government have no feeling but contempt for those who would circumvent the law. On the surface, "midnight dumping" would appear to gain an economic advantage for the dumper. However, as time has shown, this economic advantage is soon lost by the responsible party having to clean up and make whole an environmental impact. An individual, industry, or

municipality who disposes of hazardous substances in an unpermitted manner is threatening the financial health of the organization and its ability to stay in business long term. North Carolina Citizens for Business and Industry oppose unpermitted and illegal dumping and support efforts to control and eliminate this activity.

In the past Legislative Session, a draft bill was proposed that made dumping of toxic substances a felony. The bill in its draft form created a number of concerns in relation to permitted and legal activities. The bill did not speak to amount of discharge; so technically, any amount, however small, could be considered an illegal discharge. Along the same line, the bill did not provide for any permitted discharge of the identified materials. As an example, one of the elements to be controlled was copper. So conceivably, if any trace of copper were found in the discharge of the city of Raleigh, that waste treatment system operator could have been charged with a felony. Another area of concern was the lack of any defense. Such things as acts of God, hurricanes, tornadoes, storms, acts of war, negligence, or omission of a third party, all are events that an individual has no control over. But yet, the ~~New~~ ~~act~~ would have fallen as heavily upon the individual that suffered an illegal discharge due to a storm or hurricane as the so-called "midnight dumper". The quarrel was not with the concept of the bill, but rather the mechanics of how illegal dumping was prevented yet did not ensnare legal permitted discharges or activities such as the agricultural application

of herbicides or pesticides. Basically, a lot of work was needed on a very complex issue in order to develop a sound practical law.

Fortunately there already exists a body of law that addresses exactly the problem of illegal dumping. Federal Regulation 40CFR117, Determination of Reportable Quantities for Hazardous Substances, addresses 297 chemicals, the amounts of concern, qualifies defenses, defines penalties, defines applicability, and touches all the elements that are necessary to control illegal dumping yet allow legal permitted activities to continue. That particular regulation takes an item such as DDT and establishes a one-pound reporting limit on any spills or discharges to water or land. Other chemicals of less acute toxicity have higher levels of reporting, ranging in increments of 10, 100, and 1,000 pounds, up to 5,000 pounds for some rather innocuous chemicals.

In addition to the Federal Regulation, a North Carolina Statute, Article 21A, Oil Pollution and Hazardous Substances Control GS143-215.75 also addresses the problem of illegal dumping. The North Carolina Oil Pollution and Hazardous Substances Control Law includes, I believe, all the elements that are necessary to prevent illegal discharges or dumping and still allow lawful activities. Looking at some of the highlights of this law, the Act defines discharge as any emissions, spillage, leakage, pumping, pouring, emptying, or dumping of oil or other hazardous substances into waters or upon the land in such proximity to

waters that oil or other hazardous substances is reasonably likely to reach the waters but shall not include amounts less than quantities which may be harmful to the public health or welfare as determined pursuant to GS143-215.77A. .77A references 40CFR-117 the list of chemicals and amounts as defined by the U. S. Environmental Protection Agency of which I previously spoke. .77A also provides for the N. C. Environmental Management Commission to override any future modifications of this list if they feel that it is not in the best interest of North Carolina. The North Carolina Act includes a number of other elements addressing such things as confidential information obtained during inspections, defining the authority for inspections, recognizing local ordinances, discusses the removal of prohibited discharges, defines the requirement for notice of any spills pursuant to the act, defines the relationship with other State agencies concerning the act, Board of Transportation, Environmental Management Commission, Wildlife Resources, establishes a hazardous substances pollution protection fund for clean-up of spills, provides for cost recovery of direct expenses and damage to the environment, and discusses very clearly the liability of the discharger. The Act establishes penalties, both civil and criminal. The civil penalty for failure to report a discharge is \$5,000. The criminal penalty for any person who intentionally, knowingly, or willfully discharges or causes the discharge of oil or other hazardous substances in violation of the act is imprisonment not to exceed six months or a fine of no more than \$10,000, or both, at the discretion of the court.

I have enclosed with my testimony copies of the North Carolina Act and the Federal Regulation for your detailed review.

It is strongly felt that existing North Carolina law does everything that the original felonious dumping proposal wished to address. I would encourage your review of the submitted documents and if the committee feels that stronger legislation is necessary, then modifications should be made to the existing article 21A, Oil Pollution and Hazardous Substances Control. However, this is already a strong statute and, quite frankly, may be difficult to improve upon.

Thank you very much for the opportunity to speak to you. Thank you for your time and attention.

10-26-84

§ 143-215.74: Reserved for future codification purposes.

ARTICLE 21A.

Oil Pollution and Hazardous Substances Control.

Part 1. General Provisions.

§ 143-215.75. Title.

This Article shall be known and may be cited as the "Oil Pollution and Hazardous Substances Control Act of 1978." (1973, c. 534, s. 1; 1979, c. 535, s. 1.)

Cross References. — As to review and evaluation of the programs and functions authorized under this Article, see § 143-34.26.

Legal Periodicals. — For survey of 1979 administrative law, see 58 N.C.L. Rev. 1185 (1980).

§ 143-215.76. Purpose.

It is the purpose of this Article to promote the health, safety, and welfare of the citizens of this State by protecting the land and the waters over which this State has jurisdiction from pollution by oil, oil products, oil by-products, and other hazardous substances. It is not the intention of this Article to exercise jurisdiction over any matter as to which the United States government has exclusive jurisdiction, nor in any wise contrary to any governing provision of federal law, and no provision of this Article shall be so construed. The General Assembly further declares that it is the intent of this Article to support and complement applicable provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. section 1251 et seq., as amended, and the National Contingency Plan for removal of oil adopted pursuant thereto. (1973, c. 534, s. 1; 1979, c. 535, s. 2.)

§ 143-215.77. Definitions.

As used in this Article, unless the context otherwise requires:

- (1) "Barrel" shall mean 42 U.S. gallons at 60 degrees Fahrenheit.
- (2) "Environmental Management Commission" shall mean the North Carolina Environmental Management Commission.
- (3) "Secretary" shall mean the North Carolina Secretary of Natural Resources and Community Development.
- (4) "Discharge" shall mean, but shall not be limited to, any emission, spillage, leakage, pumping, pouring, emptying, or dumping of oil or other hazardous substances into waters, or upon land in such proximity to waters that oil or other hazardous substances is reasonably likely to reach the waters, but shall not include amounts less than quantities which may be harmful to the public health or welfare as determined pursuant to G.S. 143-215.77A; provided, however, that this Article shall not be construed to prohibit the oiling of driveways, roads or streets for reduction of dust or routine maintenance; provided further, that the use of oil or other hazardous substances, oil-based products, or chemicals on the land or waters by any State, county, or municipal government agency in any program of mosquito or other pest control, or their use by any person in accepted agricultural, horticultural, or forestry practices, or in connection with aquatic weed

control or structural pest and rodent control, in a manner approved by the State, county, or local agency charged with authority over such uses, shall not constitute a discharge; provided, further, that the use of a pesticide regulated by the North Carolina Pesticide Board in a manner consistent with the labelling required by the North Carolina Pesticide Law shall not constitute a "discharge" for purposes of this Article. The word "discharge" shall also include any discharge upon land, whether or not in proximity to waters, which is intentional, knowing or willful.

- (5) "Having control over oil or other hazardous substances" shall mean, but shall not be limited to, any person, using, transferring, storing, or transporting oil or other hazardous substances immediately prior to a discharge of such oil or other hazardous substances onto the land or into the waters of the State, and specifically shall include carriers and bailees of such oil or other hazardous substances.
- (5a) "Hazardous substance" shall mean any substance, other than oil, which when discharged in any quantity may present an imminent and substantial danger to the public health or welfare, as designated pursuant to G.S. 143-215.77A.
- (6) Repealed by Session Laws 1979, c. 981, s. 5.
- (7) "Department" shall mean the Department of Natural Resources and Community Development.
- (8) "Oil" shall mean oil of any kind and in any form, including, but specifically not limited to, petroleum, crude oil, diesel oil, fuel oil, gasoline, lubrication oil, oil refuse, oil mixed with other waste, oil sludge, petroleum related products or by-products, and all other liquid hydrocarbons, regardless of specific gravity, whether singly or in combination with other substances.
- (9) "Bailee" shall mean any person who accepts oil or other hazardous substances to hold in trust for another for a special purpose and for a limited period of time.
- (10) "Carrier" shall mean any person who engages in the transportation of oil or other hazardous substances for compensation.
- (11) "Oil terminal facility" shall mean any facility of any kind and related appurtenances located in, on or under the surface of any land, or water, including submerged lands, which is used or capable of being used for the purpose of transferring, transporting, storing, processing, or refining oil; but shall not include any facility having a storage capacity of less than 500 barrels, nor any retail gasoline dispensing operation serving the motoring public. A vessel shall be considered an oil terminal facility only in the event that it is utilized to transfer oil from another vessel to an oil terminal facility; or to transfer oil between one oil terminal facility and another oil terminal facility; or is used to store oil.
- (12) "Operator" shall mean any person owning or operating an oil terminal facility or pipeline, whether by lease, contract, or any other form of agreement.
- (13) "Person" shall mean any and all natural persons, firms, partnerships, associations, public or private institutions, municipalities or political subdivisions, governmental agencies, or private or public corporations organized or existing under the laws of this State or any other state or country.
- (14) "Pipeline" shall mean any conduit, pipe or system of pipes, and any appurtenances related thereto and used in conjunction therewith, used, or capable of being used, for transporting or transferring oil to, from, or between oil terminal facilities.

- (15) "Restoration" or "restore" shall mean any activity or project undertaken in the public interest or to protect public interest or to protect public property or to promote the public health, safety or welfare for the purpose of restoring any lands or waters affected by an oil or other hazardous substances discharge as nearly as is possible or desirable to the condition which existed prior to the discharge.
- (16) "Transfer" shall mean the transportation, on-loading or off-loading of oil or other hazardous substances between or among two or more oil terminal facilities; between or among oil terminal facilities and vessels; and between or among two or more vessels.
- (17) "Vessel" shall include every description of watercraft or other contrivance used, or capable of being used, as a means of transportation on water, whether self-propelled or otherwise, and shall include, but shall not be limited to, barges and tugs; provided that the term "vessel" as used herein shall not apply to any pleasure, sport or commercial fishing vessel which has a fuel capacity of less than 500 gallons and is not used to transport petroleum, petroleum products, or general cargo.
- (18) "Waters" shall mean any stream, river, creek, brook, run, canal, swamp, lake, sound, tidal estuary, bay, reservoir, waterway or any other body or accumulation of water, surface or underground, public or private, natural or artificial, which is contained within, flows through, or borders upon this State, or any portion thereof, including those portions of the Atlantic Ocean over which this State has jurisdiction. (1973, c. 534, s. 1; c. 1262, s. 23; 1977, c. 771, s. 4; 1979, c. 535, ss. 3-10; c. 981, ss. 3-5; 1979, 2nd Sess., c. 1209, ss. 1, 2.)

Legal Periodicals. — For survey of 1979 administrative law, see 58 N.C.L. Rev. 1185 (1980).

§ 143-215.77A. Designation of hazardous substances and determination of quantities which may be harmful.

(a) Those substances designated as hazardous as of June 1, 1980, by the Administrator of the United States Environmental Protection Agency under 33 U.S.C. 1321(b)(2)(A) are designated as hazardous substances for purposes of this Article.

(b) Such quantities of hazardous substances as may be harmful as determined as of June 1, 1980, by the Administrator of the United States Environmental Protection Agency under 33 U.S.C. 1321(b)(4) are quantities which may be harmful for purposes of this Article.

(c) Changes by Administrator of the United States Environmental Protection Agency in the designation of hazardous substances and the determination of quantities which may be harmful shall be deemed to be made to the designation of hazardous substances and the determination of quantities for purposes of this Article, unless the Commission objects within 120 days of publication of the action in the Federal Register. The Commission may object to a change by the Administrator on the basis that the change is not consistent with the standards for determining hazardous substances or harmful quantities. Upon objection by the Commission to a change, a public hearing must be held pursuant to Article 2 of Chapter 150A of the General Statutes. The change will not be made pending the hearing and a final determination by the Commission. After the hearing, the Commission may reject the change

upon a finding that the change is not consistent with the standards for determining hazardous substances or harmful quantities. (1979, 2nd Sess., c. 1209, s. 3.)

§ 143-215.78. Oil pollution control program.

The Department shall establish an oil pollution control program for the administration of this Article. The Department may employ and prescribe the duties of employees assigned to this activity. (1973, c. 534, s. 1; c. 1262, s. 23; 1979, c. 535, s. 11.)

§ 143-215.79. Inspections and investigations; entry upon property.

The Environmental Management Commission, through its authorized representatives, is empowered to conduct such inspections and investigations as shall be reasonably necessary to determine compliance with the provisions of this Article; to determine the person or persons responsible for violation of this Article; to determine the nature and location of any oil or other hazardous substances discharged to the land or waters of this State; and to enforce the provisions of this Article. The authorized representatives of the Environmental Management Commission are empowered upon presentation of their credentials to enter upon any private or public property, including boarding any vessel, for the purpose of inspection or investigation or in order to conduct any project or activity to contain, collect, disperse or remove oil or other hazardous substances discharges or to perform any restoration necessitated by an oil or other hazardous substances discharge. Neither the State nor its agencies, employees or agents shall be liable in trespass or damages arising out of the conduct of any inspection, investigation, or oil or other hazardous substances removal or restoration project or activity other than liability for damage to property or injury to persons arising out of the negligent or willful conduct of an employee or agent of the State during the course of an inspection, investigation, project or activity. (1973, c. 534, s. 1; c. 1262, s. 23; 1979, c. 535, s. 12.)

Legal Periodicals. — For survey of 1979 administrative law, see 58 N.C.L. Rev. 1185 (1980).

§ 143-215.80. Confidential information.

Any information relating to a secret process, device or method of manufacturing or production discovered or obtained in the course of an inspection, investigation, project or activity conducted pursuant to this Article shall not be revealed except as may be required by law or lawful order or process. (1973, c. 534, s. 1.)

§ 143-215.81. Authority supplemental.

The authority and powers granted under this Article shall be in addition to, and not in derogation of, any authority or powers vested in the Environmental Management Commission under any other provision of law, except to the extent that such other powers or authority may conflict directly with the powers and authority granted under this Article; and the Environmental Management Commission is empowered to adopt such rules and regulations as are necessary to administer and carry out the purposes of this Article. (1973, c. 534, s. 1; c. 1262, s. 23.)

§ 143-215.82. Local ordinances.

Nothing in the Article shall be construed to deny any county, municipality, sanitary district, metropolitan sewerage district or other authorized local governmental entity, by ordinance, regulation or law, from exercising police powers with reference to the prevention and control of oil or other hazardous substances discharges to sewers or disposal systems. (1973, c. 534, s. 1; 1979, c. 535, s. 13.)

Part 2. Oil Discharge Controls.

§ 143-215.83. Discharges.

(a) Unlawful Discharges. — It shall be unlawful, except as otherwise provided in this Part, for any person to discharge, or cause to be discharged, oil or other hazardous substances into or upon any waters, tidal flats, beaches, or lands within this State, or into any sewer, surface water drain or other waters that drain into the waters of this State, regardless of the fault of the person having control over the oil or other hazardous substances, or regardless of whether the discharge was the result of intentional or negligent conduct, accident or other cause.

(b) Excepted Discharges. — This section shall not apply to discharges of oil or other hazardous substances in the following circumstances:

- (1) When the discharge was authorized by an existing regulation of the Environmental Management Commission.
- (2) When any person subject to liability under this Article proves that a discharge was caused by any of the following:
 - a. An act of God.
 - b. An act of war or sabotage.
 - c. Negligence on the part of the United States government or the State of North Carolina or its political subdivisions.
 - d. An act or omission of a third party, whether any such act or omission was or was not negligent.
 - e. Any act or omission by or at the direction of a law-enforcement officer or fireman.

(c) Permits. — Any person who desires or proposes to discharge oil or other hazardous substances onto the land or into the waters of this State shall first make application for and secure the permit required by G.S. 143-215.1. Application shall be made pursuant to the rules and regulations adopted by the Environmental Management Commission. Any permit granted pursuant to this subsection may contain such terms and conditions as the Environmental Management Commission shall deem necessary and appropriate to conserve and protect the land or waters of this State and the public interest therein. (1973, c. 534, s. 1; c. 1262, s. 23; 1979, c. 535, s. 14.)

§ 143-215.84. Removal of prohibited discharges.

(a) Person Discharging. — Any person having control over oil or other hazardous substances discharged in violation of this Article shall immediately undertake to collect and remove the discharge and to restore the area affected by the discharge as nearly as may be to the condition existing prior to the discharge. If it is not feasible to collect and remove the discharge, the person responsible shall take all practicable actions to contain, treat and disperse the discharge; but no chemicals or other dispersants or treatment materials which will be detrimental to the environment or natural resources shall be used for such purposes unless they shall have been previously approved by the Environmental Management Commission.

(b) Removal by Department. — Notwithstanding the requirements of subsection (a) of this section, the Department is authorized and empowered to utilize any staff, equipment and materials under its control or supplied by other cooperating State or local agencies and to contract with any agent or contractor that it deems appropriate to take such actions as are necessary to collect, investigate, perform surveillance over, remove, contain, treat or disperse oil or other hazardous substances discharged onto the land or into the waters of the State and to perform any necessary restoration. The Secretary shall keep a record of all expenses incurred in carrying out any project or activity authorized under this section, including actual expenses incurred for services performed by the State's personnel and for use of the State's equipment and material. The authority granted by this subsection shall be limited to projects and activities that are designed to protect the public interest or public property, and shall be compatible with the National Contingency Plan established pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. section 1251 et seq.

(c) The Secretary of the Department of Transportation is authorized and empowered, after consultation with the Secretary of Natural Resources and Community Development, to purchase and equip a sufficient number of trucks designed to carry out the provisions of subsection (b). These trucks shall be maintained by the Department of Transportation and shall be strategically located at various locations throughout the State so as to furnish a ready response when word of an oil or other hazardous substances discharge has been received. The Secretary of the Department of Natural Resources and Community Development or his designee will, after consultation, decide where the trucks are to be located.

(d) The Secretary of the Department of Transportation and the Secretary of the Department of Natural Resources and Community Development or their designees shall prepare rules and regulations and develop procedures for the placement of these trucks and shall determine the manner and way in which they are to be used. The Secretary of the Department of Natural Resources and Community Development shall reimburse the Department of Transportation for expenses incurred by the Department of Transportation during cleanups as provided in G.S. 143-215.88. (1973, c. 534, s. 1; c. 1262, s. 23; 1975, c. 885; 1977, c. 771, s. 4; 1979, c. 535, s. 15.)

§ 143-215.85. Required notice.

Every person owning or having control over oil or other substances discharged in any circumstances other than pursuant to existing regulation of the Environmental Management Commission or the U. S. Environmental Protection Agency or pursuant to a permit required by G.S. 143-215.1 or the Federal Water Pollution Control Act, upon notice that such discharge has occurred, shall immediately notify the Department, or any of its agents or employees, of the nature, location and time of the discharge and of the measures which are being taken or are proposed to be taken to contain and remove the discharge. The agent or employee of the Department receiving the notification shall immediately notify the Secretary of Natural Resources and Community Development or such member or members of the permanent staff of the Department as the Secretary may designate. If the discharged substance of which the Department is notified is a pesticide regulated by the North Carolina Pesticide Board, the Department shall immediately inform the Secretary of the Pesticide Board. Removal operations under this Article of substances identified as pesticides defined in G.S. 143-460 shall be coordinated in accordance with the Pesticide Emergency Plan adopted by the North Carolina Pesticide Board; provided that, in instances where entry of such hazardous substances into waters of the State is imminent, the Department may take such actions as are

necessary to physically contain or divert such substance so as to prevent entry into the surface waters. (1973, c. 534, s. 1; c. 1262, s. 23; 1977, c. 771, s. 4; c. 858, s. 1; 1979, c. 535, ss. 16, 17.)

Legal Periodicals. — For survey of 1979 administrative law, see 58 N.C.L. Rev. 1185 (1980).

§ 143-215.86. Other State agencies and State-designated local agencies.

(a) **Cooperative Effort.** — The Board of Transportation, the North Carolina Wildlife Resources Commission, and any other agency of this State and any local agency designated by the State shall cooperate with and lend assistance to the Environmental Management Commission by assigning to the Environmental Management Commission upon its request personnel, equipment and material to be utilized in any project or activity related to the containment, collection, dispersal or removal of oil or other hazardous substances discharged upon the land or into the waters of this State.

(b) **Planning.** — Subsequent to May 16, 1973, and prior to September 1, 1973, designated representatives of the Environmental Management Commission, the Board of Transportation, and the Wildlife Resources Commission and any other agency or agencies of the State which the Environmental Management Commission shall deem necessary and appropriate, shall confer and establish plans and procedures for the assignment and utilization of personnel, equipment and material to be used in carrying out the purposes of this Part. Every State agency involved is authorized to adopt such rules and regulations as shall be necessary to effectuate the purposes of this section.

(c) **Accounts.** — Every State agency or other State-designated local agency participating in the containment, collection, dispersal or removal of an oil or other hazardous substances discharge or in restoration necessitated by such discharge, shall keep a record of all expenses incurred in carrying out any such project or activity including the actual services performed by the agency's personnel and the use of the agency's equipment and material. A copy of all records shall be delivered to the Environmental Management Commission upon completion of the project or activity. (1973, c. 507, s. 5; c. 534, s. 1; c. 1262, s. 23; 1979, c. 535, ss. 18, 19.)

Editor's Note. — Pursuant to Session Law 1973, c. 507, s. 5, "Board of Transportation" has been substituted for "North Carolina State Highway Commission" and "State Highway Commission."

Legal Periodicals. — For survey of 1979 administrative law, see 58 N.C.L. Rev. 1185 (1980).

§ 143-215.87. Oil or Other Hazardous Substances Pollution Protection Fund.

There is hereby established under the control and direction of the Department an Oil or Other Hazardous Substances Pollution Protection Fund which shall be a nonlapsing, revolving fund consisting of any moneys appropriated for such purpose by the General Assembly or that shall be available to it from any other source. The moneys shall be used to defray the expenses of any project or program for the containment, collection, dispersal or removal of oil or other hazardous substances discharged to the land or waters of this State or for restoration necessitated by the discharge. In addition to any moneys that shall be appropriated or otherwise made available to it, the fund shall be maintained

by fees, charges, penalties or other moneys paid to or recovered by or on behalf of the Department under the provisions of this Part. Any moneys paid to or recovered by or on behalf of the Department as fees, charges, penalties or other payments as damages authorized by this Part shall be paid to the Oil or Other Hazardous Substances Pollution Protection Fund in an amount equal to the sums expended from the fund for the project or activity. Within the meaning of this section, the word "penalties" means civil penalties and does not include criminal fines or penalties. (1973, c. 534, s. 1; c. 1262, s. 23; 1979, c. 535, s. 20.)

Legal Periodicals. — For survey of 1979 administrative law, see 58 N.C.L. Rev. 1185 (1980).

§ 143-215.88. Payment to State agencies or State-designated local agencies.

Upon completion of any oil or other hazardous substances removal or restoration project or activity conducted pursuant to the provisions of this Part, each agency of the State or any State-designated local agency that has participated by furnishing personnel, equipment or material shall deliver to the Department a record of the expenses incurred by the agency. The amount of incurred expenses shall be disbursed by the Secretary to each such agency from the Oil or Other Hazardous Substances Pollution Protection Fund. Upon completion of any oil or other hazardous substances removal or restoration project or activity, the Secretary shall prepare a statement of all expenses and costs of the project or activity expended by the State and shall make demand for payment upon the person having control over the oil or other hazardous substances discharged to the land or waters of the State, unless the Environmental Management Commission shall determine that the discharge occurred due to any of the reasons stated in G.S. 143-215.83(b). Any person having control of oil or other hazardous substances discharged to the land or waters of the State in violation of the provisions of this Part and any other person causing or contributing to the discharge of oil or other hazardous substances shall be directly liable to the State for the necessary expenses of oil or other hazardous substances cleanup projects and activities arising from such discharge and the State shall have a cause of action to recover from any or all such persons. If the person having control over the oil or other hazardous substances discharged shall fail or refuse to pay the sum expended by the State, the Secretary shall refer the matter to the Attorney General of North Carolina, who shall institute an action in the name of the State in the Superior Court of Wake County, or in his discretion, in the superior court of the county in which the discharge occurred, to recover such cost and expenses. (1973, c. 534, s. 1; c. 1262, s. 23; 1977, c. 858, s. 2; 1979, c. 535, ss. 21, 22.)

§ 143-215.89. Multiple liability for necessary expenses.

Any person liable for costs of cleanup of oil or other hazardous substances under this Part shall have a cause of action to recover such costs in part or in whole from any other person causing or contributing to the discharge of oil or other hazardous substances into the waters of the State, including any amount recoverable by the State as necessary expenses. The total recovery by the State for damage to the public resources pursuant to G.S. 143-215.91 and for the cost of oil or other hazardous substances cleanup, arising from any discharge, shall not exceed the applicable limits prescribed by federal law with respect to the United States government on account of such discharge. (1973, c. 534, s. 1; 1979, c. 535, s. 23.)

Effect of Amendments. — The 1975 amendments to this Article shall be deemed to have been inserted in the original version of this Article as if they had been so inserted near the beginning and at the ending of 1975.

§ 143-215.91. Liability for damage to public resources.

(a) Any person who discharges or otherwise causes or contributes to a violation of this Article or violates any order, rule or regulation of the Environmental Management Commission adopted pursuant to this Article, or fails to perform any duty imposed by this Article, or violates an order or other determination of the Environmental Management Commission made pursuant to the provisions of this Article, including the provisions of Article 143a large permit issued pursuant to G.S. 143-215.1, and in the course thereof causes the death of, or injury to fish, animals, vegetation or other resources of the State or otherwise causes a reduction in the quality of the waters of the State below the standards set by the Environmental Management Commission, shall be liable to pay the State damages. Such damages shall be an amount equal to the cost of all reasonable and necessary investigations made or caused to be made by the Environmental Management Commission in connection with such violation and the sum of money necessary to restore such waters, replenish such resources, or otherwise restore the rivers, streams, bays, tidal flats, beaches, estuaries or coastal waters and public lands adjoining the seacoast to their condition prior to the injury as such condition is determined by the Environmental Management Commission in conference with the Wildlife Resources Commission, and any other State agencies having an interest affected by such violation (or by the designees of any such boards, commissions and agencies).

(b) Upon receipt of the estimate of damages caused, the Department shall give written notice by registered mail to the person responsible for the death, killing, or injury to fish, animals, vegetation or other resources of the State, or any reduction in quality of the waters of the State describing the damages and their causes with reasonable specificity and shall request payment from such person. Damages shall become due and payable upon receipt of such notice. Upon written application to the Department within 30 days of receipt of notice, the person assessed damages may request an administrative hearing pursuant to G.S. 143-215.4. On such hearing, the estimate of the replacement cost of fish or animals or vegetation destroyed, and the estimate of costs of replacing or restoring other resources of the State, and the estimate of the cost of restoring the quality of waters of the State shall be prima facie evidence of the actual replacement cost of fish, animals, vegetation or other resources of the State, and of the actual cost of restoring the quality of the waters of the State; provided, that such evidence is rebuttable. In arriving at such estimate, any reasonably accurate method may be used and it shall not be necessary for any agent of the Department or Wildlife Resources Commission to collect, handle, or weigh numerous specimens of dead or injured fish, animals, vegetation or other resources of the State, or to calculate the costs of restoring the quality of the waters using any technology other than that which is existing and practicable, as found to be such by the Secretary. Provided, that the Department may effect such mitigation of the amount of damages as the Commission may deem proper and reasonable. Appeal from final determination of the Commission or its agents pursuant to such a hearing shall be pursuant to G.S. 143-215.5. If the damages are not paid to the Department within 30 days of receipt of notice, or if the amount of damages provided in an order issued subsequent to an application to the Department is not paid within 30 days of the issuance thereof, the Attorney General, upon request of the Department, shall bring an action to recover such damages in the name of the State, in the Superior Court of Wake County, or in his discretion in the superior court of any other county in which the damages occurred. Upon such

action being brought, the scope of the court's review shall be as provided in G.S. 150A-51. Any money recovered by the Attorney General or by payment of damages by the person charged therewith by the Department shall be transferred by the Environmental Management Commission to appropriate funds administered by the State agencies affected by the violation for use in such activities as food fish or shellfish management programs, wildlife and waterfowl management programs, water quality improvement programs and such other uses as may best mitigate the damage incurred as a result of the violation. No action shall be authorized under the provisions of this section against any person operating in compliance with the conditions of a waste discharge permit issued pursuant to G.S. 143-215.1 and the provisions of this Part.

(c) For the purpose of carrying out its duties under this Article, the Environmental Management Commission shall have the power to direct the investigation of any death, killing, or injury to fish, animals, vegetation or other resources of the State, or any reduction in quality of the waters of the State, which in the opinion of the Environmental Management Commission is of sufficient magnitude to justify investigation (1973, c. 534, s. 1; c. 1262, s. 23; 1979, c. 535, s. 24.)

Legal Periodicals. — For survey of 1979 administrative law, see 58 N.C.L. Rev. 1185 (1980).

§ 143-215.91. Penalties.

(a) Civil Penalties. — Any person who intentionally or negligently discharges oil or other hazardous substances, or knowingly causes or permits the discharge of oil in violation of this Part or fails to report a discharge as required by G.S. 143-215.85, shall incur, in addition to any other penalty provided by law, a penalty in an amount not to exceed five thousand dollars (\$5,000) for every such violation, the amount to be determined by the Environmental Management Commission after taking into consideration the gravity of the violation, the previous record of the violator in complying or failing to comply with the provisions of this Part as well as G.S. 143-215.1, the amount expended by the violator in complying with the provisions of G.S. 143-215.84, the estimated damages attributed to the violator under G.S. 143-215.90, and such other considerations as the Environmental Management Commission deems appropriate. Every act or omission which causes, aids or abets a violation of this section shall be considered a violation under the provisions of this section and subject to the penalty herein provided. The penalty herein provided for shall become due and payable when the person incurring the penalty receives a notice in writing from the Environmental Management Commission describing the violation with reasonable particularity and advising such person that the penalty is due. The Environmental Management Commission may, upon written application therefor, receive within 15 days, and when deemed in the best interest of the State in carrying out the purposes of this Article, remit or mitigate any penalty provided for in this section or discontinue any action to recover the penalty upon such terms as it, in its discretion, shall deem proper, and shall have the authority to ascertain facts upon all such applications in such manner and under such regulations as the Environmental Management Commission may adopt. If the amount of such penalty is not paid to the Department within 15 days after receipt of notice, or if an application for remission or mitigation has not been made within 15 days as herein provided, and the amount provided in the order issued by the Environmental Management Commission subsequent to such application is not

paid within 15 days of receipt thereof, the Attorney General, upon request of the Environmental Management Commission, shall bring an action in the name of the State in the Superior Court of Wake County or of any other county wherein such violator does business, to recover the amount specified in the final order of the Environmental Management Commission. In any such action, the amount of the penalty shall be subject to review by the court. In all such actions the procedures and rules of evidence shall be the same as in an ordinary civil action except as otherwise in this Article provided. Notification received pursuant to this subsection or information obtained by the exploitation of such notification shall not be used against any person in any criminal case, except as prosecution for perjury or for giving a false statement.

(b) **Criminal Penalties.** — Any person who intentionally or knowingly or willfully discharges or causes or permits the discharge of oil or other hazardous substances in violation of this Part shall be guilty of a misdemeanor punishable by imprisonment not to exceed six months or by fine to be not more than ten thousand dollars (\$10,000), or by both, in the discretion of the court. No proceeding shall be brought or continued under this subsection for or on account of a violation by any person who has previously been convicted of a federal violation or a local ordinance violation based upon the same set of facts.

(c) The civil and criminal penalties provided by this section (except the civil penalty for failure to report) shall not apply to the discharge of a pesticide regulated by the North Carolina Pesticide Board, if such discharge would constitute a violation of the North Carolina Pesticide Law and if such discharge has not entered the surface waters of the State. (1973, c. 534, s. 1; 1973, c. 1262, s. 23; 1979, c. 535, ss. 25, 26.)

§ 143-215.92. Lien on vessel.

Any vessel (other than one owned or operated by the State of North Carolina or its political subdivisions or the United States government) from which oil or other hazardous substances is discharged in violation of this Part or any regulation prescribed pursuant thereto, shall be liable for the pecuniary penalty and costs of oil or other hazardous substances removal specified in this Part and such penalty and costs shall constitute a lien on such vessel; provided, however, that said lien shall not attach if a surety bond is posted with the Environmental Management Commission in an amount and with sureties acceptable to the Environmental Management Commission, or a cash deposit is made with the Environmental Management Commission in an amount acceptable to the Environmental Management Commission. Provided further, that such lien shall not have priority over any existing perfected lien or security interest. The Environmental Management Commission may adopt regulations providing for such conditions, limitations, and requirements concerning the bond or deposit prescribed by this section as the Environmental Management Commission deems necessary. (1973, c. 534, s. 1; c. 1262, s. 23; 1979, c. 535, s. 27.)

§ 143-215.93. Liability for damage caused.

Any person having control over oil or other hazardous substances which enters the waters of the State in violation of this Part shall be strictly liable, without regard to fault, for damages to persons or property, public or private, caused by such entry, subject to the exceptions enumerated in G.S. 143-215.83(b). (1973, c. 534, s. 1; 1979, c. 535, s. 28.)

C- 30

§ 143-215.94. Joint and several liability.

In order to provide maximum protection for the public interest, any actions brought pursuant to G.S. 143-215.88 through 143-215.91(a), 143-215.93 or any other section of this Article, for recovery of cleanup costs or for civil penalties or for damages, may be brought against any one or more of the persons having control over the oil or other hazardous substances or causing or contributing to the discharge of oil or other hazardous substances. All said persons shall be jointly and severally liable, but ultimate liability as between the parties may be determined by common-law principles. (1973, c. 534, s. 1; 1977, c. 858, s. 3; 1979, c. 535, s. 29.)

Part 3. Oil Terminal Facilities.**§ 143-215.95. Duties of Secretary of Natural Resources and Community Development.**

The Secretary of Natural Resources and Community Development shall administer the provisions for registration of oil terminal facilities contained in this Part. In addition, he shall engage in such study and research concerning oil terminal facilities and their regulation in this State and elsewhere as may be required to furnish the General Assembly with a thorough factual basis for his recommendations for further legislation pursuant to this Part. (1973, c. 534, s. 1; 1977, c. 771, s. 4.)

§ 143-215.96. Oil terminal facility registration.

Prior to November 10, 1973, the owner or operator of every oil terminal facility in the State shall secure a registration certificate from the Secretary of Natural and Economic Resources. Such a certificate shall be issued only where the applicant shall have furnished the following information concerning the oil terminal facility:

- (1) Complete name of owner and operator of the oil terminal facility together with addresses and telephone numbers;
- (2) Number of employees of the oil terminal facility and the principal officers;
- (3) Maps or sketches, based on criteria developed by the Secretary of Natural and Economic Resources to show property lines of the oil terminal facility and location of nearby watercourses or bodies of water as specified by the Secretary; and
- (4) Summary of present and proposed procedures, if any, for prevention of oil spills.

The owner or operator of any oil terminal facility which begins operation subsequent to the initial registration date specified in this section shall secure a registration certificate no later than 30 days after beginning operations. (1973, c. 534, s. 1.)

Editor's Note. — Because this section relates to past events, no changes have been made in it pursuant to Session Laws 1977, c. 771, s. 4, which changed the title of the Secre-

tary of Natural and Economic Resources to the Secretary of Natural Resources and Community Development.

ENVIRONMENTAL PROTECTION AGENCY REGULATIONS ON DETERMINATION OF REPORTABLE QUANTITIES FOR HAZARDOUS SUBSTANCES

(40 CFR 117; 44 FR 50776, August 29, 1979, Effective September 28, 1979;
Corrected by 44 FR 58711, October 11, 1979; 44 FR 58910, October 12, 1979; 44 FR
65400, November 13, 1979)

[Editor's note: EPA August 29, 1979, indefinitely deferred the effective date of these regulations for common carriers who are precluded by federal law from obtaining data on whether their cargoes include hazardous substances (44 FR 50766). EPA September 17, 1980, said that common carriers will be required to report discharges of hazardous substances beginning November 20, 1980 (45 FR 61617).

Moreover, promulgation of this part effectively lifts the Federal Maritime Commission's stay of applicable provisions of 46 CFR 542, pertaining to financial liability for discharges of hazardous substances. The commission's rules have the same effective date as this part. (See editor's note at end of 46 CFR 542, published at page 131:1101.)

EPA September 17, 1979, postponed applicability and enforcement of these regulations for lime, pending final action regarding the continued designation of calcium oxide and calcium hydroxide as hazardous substances (44 FR 53749). The agency November 13, 1979, deleted these chemicals from the hazardous substances list.]

PART 117—DETERMINATION OF REPORTABLE QUANTITIES FOR HAZARDOUS SUBSTANCES

Subpart A—General Provisions

Sec.

- 117.1 Definitions.
- 117.2 Abbreviations
- 117.3 Determination of reportable quantities.

Subpart B—Applicability

- 117.11 General applicability.
- 117.12 Applicability to discharges from facilities with NPDES permits.
- 117.13 Applicability to discharges from publicly owned treatment works and their users.
- 117.14 Demonstration projects.

Subpart C—Notice of Discharge of a Reportable Quantity

- 117.21 Notice.
- 117.22 Penalties.
- 117.23 Liabilities for removal.

Authority: Secs. 311 and 501(a), Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), ("the Act") and Executive Order 11735.

Subpart A—General Provisions

§ 117.1 Definitions.

As used in this part, all terms shall have the meanings stated in 40 CFR Part 116.

(a) "Reportable quantities" means quantities that may be harmful as set forth in § 117.3, the discharge of which is a violation of section 311(b)(3) and requires notice as set forth in § 117.21.

(b) "Administrator" means the Administrator of the Environmental Protection Agency ("EPA").

(c) "Mobile source" means any vehicle, rolling stock, or other means of transportation which contains or carries a reportable quantity of a hazardous substance.

(d) "Public record" means the NPDES permit application or the NPDES permit itself and the "record for final permit" as defined in 40 CFR 124.122.

(e) "National Pretreatment Standard" or "Pretreatment Standard" means any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to industrial users of a publicly owned treatment works. It further means any State or local pretreatment requirement applicable to a discharge and which is incorporated into a permit issued to a publicly owned treatment works under section 402 of the Act.

(f) "Publicly Owned Treatment Works" or "POTW" means a treatment

works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act). This definition includes any sewers that convey wastewater to such a treatment works, but does not include pipes, sewers or other conveyances not connected to a facility providing treatment. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

(g) "Remove" or "removal" refers to removal of the oil or hazardous substances from the water and shoreline or the taking of such other actions as may be necessary to minimize or mitigate damage to the public health or welfare, including, but not limited to, fish, shellfish, wildlife, and public and private property, shorelines, and beaches.

(h) "Contiguous zone" means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and Contiguous Zone.

(i) "Navigable waters" means "waters of the United States, including the territorial seas." This term includes:

(1) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) Interstate waters, including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams, (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation or destruction of which would affect or could affect interstate or

foreign commerce including any such waters:

- (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
- (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce;
- (iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as navigable waters under this paragraph;

(5) Tributaries of waters identified in paragraphs (i)(1)-(4) of this section, including adjacent wetlands; and

(6) Wetlands adjacent to waters identified in paragraphs (i)(1)-(5) of this section ("Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally included playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds): *Provided*, That waste treatment systems (other than cooling ponds meeting the criteria of this paragraph) are not waters of the United States.

(j) "Process waste water" means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

§ 117.2 Abbreviations.

NPDES equals National Pollutant Discharge Elimination System. RQ equals reportable quantity.

§ 117.3 Determination of reportable quantities.

The quantity listed with each substance in Table 117.3 is determined to be the reportable quantity for that substance.

Table 117.3—Reportable Quantities of Hazardous Substances

Note.—The first number under the column headed "RQ" is the reportable quantity in pounds. The number in parentheses is the metric equivalent in kilograms. For convenience, the table contains a column

headed "Category" which lists the code letters "X", "A", "B", "C" and "D" associated with reportable quantities of 1, 10, 100, 1000 and 5000 pounds respectively.

Material	Category	RQ in pounds (kilograms)
Acetaldehyde.....	C	1,000 (454)
Acetic acid.....	C	1,000 (454)
Acetic anhydride.....	C	1,000 (454)
Acetone cyanohydrin.....	A	10 (4.54)
Acetyl bromide.....	D	5,000 (2,270)
Acetyl chloride.....	D	5,000 (2,270)
Acrolein.....	X	1 (0.454)
Acrylonitrile.....	B	100 (45.4)
Adipic acid.....	D	5,000 (2,270)
Aldrin.....	X	1 (0.454)
Allyl alcohol.....	B	100 (45.4)
Allyl chloride.....	C	1,000 (454)
Aluminum sulfate.....	D	5,000 (2,270)
Ammonia.....	B	100 (45.4)
Ammonium acetate.....	D	5,000 (2,270)
Ammonium carbonate.....	D	5,000 (2,270)
Ammonium bicarbonate.....	D	5,000 (2,270)
Ammonium bichromate.....	C	1,000 (454)
Ammonium bifluoride.....	D	5,000 (2,270)
Ammonium bisulfite.....	D	5,000 (2,270)
Ammonium carbamate.....	D	5,000 (2,270)
Ammonium carbonate.....	D	5,000 (2,270)
Ammonium chloride.....	D	5,000 (2,270)
Ammonium chromate.....	C	1,000 (454)
Ammonium citrate.....	D	5,000 (2,270)
Ammonium fluoroborate.....	D	5,000 (2,270)
Ammonium fluoride.....	D	5,000 (2,270)
Ammonium hydroxide.....	C	1,000 (454)
Ammonium oxalate.....	D	5,000 (2,270)
Ammonium silicofluoride.....	C	1,000 (454)
Ammonium sulfamate.....	D	5,000 (2,270)
Ammonium sulfide.....	D	5,000 (2,270)
Ammonium sulfite.....	D	5,000 (2,270)
Ammonium tartrate.....	D	5,000 (2,270)
Ammonium thiocyanate.....	D	5,000 (2,270)
Ammonium thiosulfate.....	D	5,000 (2,270)
Amyl acetate.....	C	1,000 (454)
Aniline.....	C	1,000 (454)
Antimony pentachloride.....	C	1,000 (454)
Antimony potassium tartrate.....	C	1,000 (454)
Antimony tribromide.....	C	1,000 (454)
Antimony trichloride.....	C	1,000 (454)
Antimony trifluoride.....	C	1,000 (454)
Antimony trioxide.....	D	5,000 (2,270)
Arsenic disulfide.....	D	5,000 (2,270)
Arsenic pentoxide.....	D	5,000 (2,270)
Arsenic trichloride.....	D	5,000 (2,270)
Arsenic trioxide.....	D	5,000 (2,270)
Arsenic trisulfide.....	D	5,000 (2,270)
Barium cyanide.....	A	10 (4.54)
Benzene.....	C	1,000 (454)
Benzoic acid.....	D	5,000 (2,270)
Benzonitrile.....	C	1,000 (454)
Benzoyl chloride.....	C	1,000 (454)
Benzyl chloride.....	B	100 (45.4)
Beryllium chloride.....	D	5,000 (2,270)
Beryllium fluoride.....	D	5,000 (2,270)
Beryllium nitrate.....	D	5,000 (2,270)
Butyl acetate.....	D	5,000 (2,270)
n-Butyl phthalate.....	B	100 (45.4)
Butylamine.....	C	1,000 (454)
Butyric acid.....	D	5,000 (2,270)
Cadmium acetate.....	B	100 (45.4)
Cadmium bromide.....	B	100 (45.4)
Cadmium chloride.....	B	100 (45.4)
Calcium arsenate.....	C	1,000 (454)
Calcium arsenite.....	C	1,000 (454)
Calcium carbide.....	D	5,000 (2,270)
Calcium chromate.....	C	1,000 (454)
Calcium cyanide.....	A	10 (4.54)
Calcium dodecylbenzenesulfonate.....	C	1,000 (454)
Calcium hypochlorite.....	B	100 (45.4)
Captan.....	A	10 (4.54)

Material	Category	RQ in pounds (kilograms)
Carbaryl.....	B	100 (45.4)
Carboran.....	A	10 (4.54)
Carbon disulfide.....	D	5,000 (2,270)
Carbon tetrachloride.....	D	5,000 (2,270)
Chlordane.....	X	1 (0.454)
Chlone.....	A	10 (4.54)
Chlorobenzene.....	B	100 (45.4)
Chloroform.....	O	5,000 (2,270)
Chlorpyrifos.....	X	1 (0.454)
Chlorosulfonic acid.....	C	1,000 (454)
Chromic acetate.....	C	1,000 (454)
Chromic acid.....	C	1,000 (454)
Chromic sulfate.....	C	1,000 (454)
Chromous chloride.....	C	1,000 (454)
Cobaltous bromide.....	C	1,000 (454)
Cobaltous formate.....	C	1,000 (454)
Cobaltous sulfamate.....	C	1,000 (454)
Coumaphos.....	A	10 (4.54)
Cresol.....	C	1,000 (454)
Crotonaldehyde.....	B	100 (45.4)
Cupric acetate.....	B	100 (45.4)
Cupric acetoarsenite.....	B	100 (45.4)
Cupric chloride.....	A	10 (4.54)
Cupric nitrate.....	B	100 (45.4)
Cupric oxalate.....	B	100 (45.4)
Cupric sulfate.....	A	10 (4.54)
Cupric sulfate ammoniated.....	B	100 (45.4)
Cupric tartrate.....	B	100 (45.4)
Cyanogen chloride.....	A	10 (4.54)
Cyclohexane.....	C	1,000 (454)
2,4-D Acid.....	B	100 (45.4)
2,4-D Esters.....	B	100 (45.4)
DDT.....	X	1 (0.454)
Diazinon.....	X	1 (0.454)
Dicamba.....	C	1,000 (454)
Dichlobenil.....	C	1,000 (454)
Dichlone.....	X	1 (0.454)
Dichlorobenzene.....	B	100 (45.4)
Dichloropropane.....	D	5,000 (2,270)
Dichloropropene.....	D	5,000 (2,270)
Dichloropropene.....	D	5,000 (2,270)
Dichloropropane Mixture.....	D	5,000 (2,270)
2,2-Dichloropropionic acid.....	D	5,000 (2,270)
Dichlorvos.....	A	10 (4.54)
Dieldrin.....	X	1 (0.454)
Dimethylamine.....	C	1,000 (454)
Dimethylamine.....	C	1,000 (454)
Dinitrobenzene.....	C	1,000 (454)
Dinitrophenol.....	C	1,000 (454)
Dinitrotoluene.....	C	1,000 (454)
Disquat.....	C	1,000 (454)
Desulfoton.....	X	1 (0.454)
Duron.....	B	100 (45.4)
Dodecylbenzenesulfonic acid.....	C	1,000 (454)
Endosulfan.....	X	1 (0.454)
Endrin.....	X	1 (0.454)
Epichlorohydrin.....	C	1,000 (454)
Ethion.....	A	10 (4.54)
Ethylbenzene.....	C	1,000 (454)
Ethylene diamine.....	C	1,000 (454)
Ethylene dibromide.....	C	1,000 (454)
Ethylene dichloride.....	D	5,000 (2,270)
EDTA.....	D	5,000 (2,270)
Ferric ammonium citrate.....	C	1,000 (454)
Ferric ammonium oxalate.....	C	1,000 (454)
Ferric chloride.....	C	1,000 (454)
Ferric fluoride.....	B	100 (45.4)
Ferric nitrate.....	C	1,000 (454)
Ferric sulfate.....	C	1,000 (454)
Ferrous ammonium sulfate.....	C	1,000 (454)
Ferrous chloride.....	B	100 (45.4)
Ferrous sulfate.....	C	1,000 (454)
Formaldehyde.....	C	1,000 (454)
Formic acid.....	D	5,000 (2,270)
Fumic acid.....	D	5,000 (2,270)
Furfural.....	C	1,000 (454)
Guthion.....	X	1 (0.454)
Heptachlor.....	X	1 (0.454)
Hexachlorocyclopentadiene.....	X	1 (0.454)
Hydrochloric acid.....	D	5,000 (2,270)
Hydrofluoric acid.....	D	5,000 (2,270)

Material	Category	RO in pounds (Micrograms)
Hydrogen cyanide	A	10 (4 54)
Hydrogen sulfide	B	100 (45 4)
Isoprene	C	1,000 (454)
Isopropenolamine	C	1,000 (454)
dodecylbenzenesulfonate		
Kerosene	D	5,000 (2,270)
Ketone	X	1 (0 454)
Lead acetate	D	5,000 (2,270)
Lead arsenate	D	5,000 (2,270)
Lead Chloride	D	5,000 (2,270)
Lead Fluoborate	D	5,000 (2,270)
Lead fluoride	C	1,000 (454)
Lead iodide	D	5,000 (2,270)
Lead nitrate	D	5,000 (2,270)
Lead stearate	D	5,000 (2,270)
Lead sulfate	D	5,000 (2,270)
Lead sulfide	D	5,000 (2,270)
Lead thiocyanate	D	5,000 (2,270)
Lindane	X	1 (0 454)
Lithium chromate	C	1,000 (454)
Malathion	A	10 (4 54)
Maleic acid	D	5,000 (2,270)
Maleic anhydride	D	5,000 (2,270)
Mercaptodimethyl	B	100 (45 4)
Mercuric cyanide	X	1 (0 454)
Mercuric nitrate	A	10 (4 54)
Mercuric sulfate	A	10 (4 54)
Mercuric thiocyanate	A	10 (4 54)
Mercurous nitrate	A	10 (4 54)
Methoxychlor	X	1 (0 454)
Methyl mercaptan	B	100 (45 4)
Methyl methacrylate	D	5,000 (2,270)
Methyl parathion	B	100 (45 4)
Mevinphos	X	1 (0 454)
Mexacarbate	A	1,000 (454)
Monoethylamine	C	1,000 (454)
Monomethylamine	C	1,000 (454)
Naled	A	10 (4 54)
Naphthalene	D	5,000 (2,270)
Naphthenic acid	B	100 (45 4)
Nickel ammonium sulfate	D	5,000 (2,270)
Nickel chloride	D	5,000 (2,270)
Nickel hydroxide	D	1,000 (454)
Nickel nitrate	C	5,000 (2,270)
Nickel sulfate	D	5,000 (2,270)
Nitric acid	C	1,000 (454)
Nitrobenzene	C	1,000 (454)
Nitrogen dioxide	C	1,000 (454)
Nitrophenol	C	1,000 (454)
Nitrotoluene	C	1,000 (454)
Parafomaldehyde	C	1,000 (454)
Parathion	X	1 (0 454)
Pentachlorophenol	A	10 (4 54)
Phenol	C	1,000 (454)
Phosgene	D	5,000 (2,270)
Phosphoric acid	D	5,000 (2,270)
Phosphorus	X	1 (0 454)
Phosphorus oxychloride	D	5,000 (2,270)
Phosphorus pentasulfide	B	100 (45 4)
Phosphorus trichloride	D	5,000 (2,270)
Polychlorinated biphenyls	A	10 (4 54)
Potassium arsenate	C	1,000 (454)
Potassium arsenite	C	1,000 (454)
Potassium bichromate	C	1,000 (454)
Potassium chromate	C	1,000 (454)
potassium cyanide	A	10 (4 54)
Potassium hydroxide	C	1000(454)
Potassium permanganate	B	100 (45 4)
Propargite	A	10 (4 54)
Propionic acid	D	5,000 (2,270)
Propionic anhydride	D	5,000 (2,270)
Propylene oxide	D	5,000 (2,270)
Pyrethrin	C	1,000 (454)
Quonolone	C	1,000 (454)
Resorcinol	C	1,000 (454)
Selenium oxide	C	1,000 (454)
Silver nitrate	X	1 (0 454)
Sodium	C	1,000 (454)
Sodium arsenate	C	1,000 (454)
Sodium arsenite	C	1,000 (454)
Sodium bichromate	C	1,000 (454)

Material	Category	RO in pounds (Micrograms)
Sodium bifluoride	D	5,000 (2,270)
Sodium bisulfite	O	5,000 (2,270)
Sodium chromate	C	1,000 (454)
Sodium cyanide	A	10 (4 54)
Sodium	C	1,000 (454)
dodecylbenzenesulfonate		
Sodium fluoride	D	5,000 (2,270)
Sodium hydrosulfide	D	5,000 (2,270)
Sodium hydroxide	C	1,000 (454)
Sodium hypochlorite	B	100 (45 4)
Sodium methylate	C	1,000 (454)
Sodium nitrite	B	100 (45 4)
Sodium phosphate dibasic	D	5,000 (2,270)
Sodium phosphate tribasic	D	5,000 (2,270)
Sodium selenite	C	1,000 (454)
Strontium chromate	C	1,000 (454)
Strychnine	A	10 (4 54)
Styrene	C	1,000 (454)
Sulfuric acid	C	1,000 (454)
Sulfur monochloride	C	1,000 (454)
2,4,5-T acid	B	100 (45 4)
2,4,5-T amines	B	100 (45 4)
2,4,5-T esters	B	100 (45 4)
2,4,5-T salts	B	100 (45 4)
2,4,5-TP acid	B	100 (45 4)
2,4,5-TP acid esters	B	100 (45 4)
TDE	X	1 (0 454)
Tetraethyl lead	B	100 (45 4)
Tetraethyl pyrophosphate	B	100 (45 4)
Thallium sulfate	C	1,000 (454)
Toluene	C	1,000 (454)
Toxaphene	X	1 (0 454)
Trichloron	C	1,000 (454)
Trichloroethylene	C	1,000 (454)
Trichlorophenol	A	10 (4 54)
Trithanovamine	C	1,000 (454)
dodecylbenzenesulfonate		
Triethylamine	D	5,000 (2,270)
Trimethylamine	C	1,000 (454)
Uranyl acetate	D	5,000 (2,270)
Uranyl nitrate	D	5,000 (2,270)
Vanadium pentoxide	C	1,000 (454)
Vanadyl sulfate	C	1,000 (454)
Vinyl acetate	C	1,000 (454)
Vinylidene chloride	O	5,000 (2,270)
Xylene	C	1,000 (454)
Xylenol	C	1,000 (454)
Zinc acetate	C	1,000 (454)
Zinc ammonium chloride	D	5,000 (2,270)
Zinc borate	C	1,000 (454)
Zinc bromide	D	5,000 (2,270)
Zinc carbonate	C	1,000 (454)
Zinc chloride	D	5,000 (2,270)
Zinc cyanide	A	10 (4 54)
Zinc fluoride	C	1,000 (454)
Zinc formate	C	1,000 (454)
Zinc hydrosulfite	C	1,000 (454)
Zinc nitrate	D	5,000 (2,270)
Zinc phenolsulfonate	D	5,000 (2,270)
Zinc phosphide	C	1,000 (454)
Zinc silicofluoride	D	5,000 (2,270)
Zinc sulfate	C	1,000 (454)
Zirconium nitrate	D	5,000 (2,270)
Zirconium potassium fluoride	D	5,000 (2,270)
Zirconium sulfate	D	5,000 (2,270)
Zirconium tetrachloride	O	5,000 (2,270)

[117.3 table corrected by 44 FR 58711, October 11, 1979; amended by 44 FR 65400, November 13, 1979]

Subpart B—Applicability

§ 117.11 General applicability.

This regulation sets forth a determination of the reportable quantity for each substance designated as hazardous in 40 CFR Part 116. The

regulation applies to quantities of designated substances equal to or greater than the reportable quantities, when discharged into or upon the navigable waters of the United States, adjoining shorelines, into or upon the contiguous zone, or beyond the contiguous zone as provided in section 311(b)(3) of the Act, except to the extent that the owner or operator can show such that discharges are made:

(a) In compliance with a permit issued under the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1401 et seq.);

(b) In compliance with approved water treatment plant operations as specified by local or State regulations pertaining to safe drinking water;

(c) Pursuant to the label directions for application of a pesticide product registered under section 3 or section 24 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended (7 U.S.C. 136 et seq.) or pursuant to the terms and conditions of an experimental use permit issued under section 5 of FIFRA, or pursuant to an exemption granted under section 18 of FIFRA;

(d) In compliance with the regulations issued under section 3004 or with permit conditions issued pursuant to section 3005 of the Resource Conservation and Recovery Act (90 Stat. 2795; 42 U.S.C. 6901);

(e) In compliance with instructions of the On-Scene Coordinator pursuant to 40 CFR 1510 (the National Oil and Hazardous Substances Pollution Plan) or 33 CFR 153.10(e) (Pollution by Oil and Hazardous Substances) or in accordance with applicable removal regulations as required by section 311(j)(1)(A);

(f) In compliance with a permit issued under § 165.7 of Title 14 of the State of California Administrative Code;

(g) From a properly functioning inert gas system when used to provide inert gas to the cargo tanks of a vessel;

(h) From a permitted source and are excluded by § 117.12 of this regulation;

(i) To a POTW and are specifically excluded or reserved in § 117.13; or

(j) In compliance with a permit issued under section 404(a) of the Clean Water Act or when the discharges are exempt from such requirements by section 404(f) or 404(r) of the Act (33 U.S.C. 1344(a), (f), (r)).

§ 117.12 Applicability to discharges from facilities with NPDES permits.

(a) This regulation does not apply to:

(1) Discharges in compliance with a permit under section 402 of this Act;

(2) Discharges resulting from circumstances identified, reviewed and made a part of the public record with respect to a permit issued or modified under section 402 of this Act, and subject to a condition in such permit;

(3) Continuous or anticipated intermittent discharges from a point source, identified in a permit or permit application under section 402 of this Act, which are caused by events occurring within the scope of the relevant operating or treatment systems; or

(b) A discharge is "in compliance with a permit issued under section 402 of this Act" if the permit contains an effluent limitation specifically applicable to the substance discharged or an effluent limitation applicable to another waste parameter which has been specifically identified in the permit as intended to limit such substance, and the discharge is in compliance with the effluent limitation

(c) A discharge results "from circumstances identified, reviewed and made a part of the public record with respect to a permit issued or modified under section 402 of the Act, and subject to a condition in such permit," whether or not the discharge is in compliance with the permit, where:

(1) The permit application, the permit, or another portion of the public record contains documents that specifically identify:

(i) The substance and the amount of the substance; and

(ii) The origin and source of the substance; and

(iii) The treatment which is to be provided for the discharge either by:

(A) An on-site treatment system separate from any treatment system treating the permittee's normal discharge; or

(B) A treatment system designed to treat the permittee's normal discharge and which is additionally capable of treating the identified amount of the identified substance; or

(C) Any combination of the above; and

(2) The permit contains a requirement that the substance and amounts of the substance, as identified in

§ 117.12(c)(1)(i) and § 117.12(c)(1)(ii) be treated pursuant to § 117.12(c)(1)(iii) in the event of an on-site release; and

(3) The treatment to be provided is in place.

(d) A discharge is a "continuous or anticipated intermittent discharge from a point source, identified in a permit or permit application under section 402 of this Act, and caused by events occurring within the scope of the relevant operating or treatment systems," whether or not the discharge is in compliance with the permit, if:

(1) The hazardous substance is discharged from a point source for which a valid permit exists or for which a permit application has been submitted; and

[117.12(d)(1) corrected by 44 FR 58910, October 12, 1979]

(2) The discharge of the hazardous substance results from:

(i) The contamination of noncontact cooling water or storm water, provided that such cooling water or storm water is not contaminated by an on-site spill of a hazardous substance; or

(ii) A continuous or anticipated intermittent discharge of process waste water, and the discharge originates within the manufacturing or treatment systems; or

(iii) An upset or failure of a treatment system or of a process producing a continuous or anticipated intermittent discharge where the upset or failure results from a control problem, an operator error, a system failure or malfunction, an equipment or system startup or shutdown, an equipment wash, or a production schedule change, provided that such upset or failure is not caused by an on-site spill of a hazardous substance.

§ 117.13 Applicability to discharges from publicly owned treatment works and their users.

(a) [Reserved], with the exception of § 117.13(b) below,

(b) These regulations apply to all discharges of reportable quantities to a POTW, where the discharge originates from a mobile source, except where such source has contracted with, or otherwise received written permission from the owners or operators of the POTW to discharge that quantity, and the mobile

source can show that prior to accepting the substance from an industrial discharger, the substance had been treated to comply with any effluent limitation under sections 301, 302 or 306 or pretreatment standard under section 307 applicable to that facility.

§ 117.14 Demonstration projects.

Notwithstanding any other provision of this part, the Administrator of the Environmental Protection Agency may, on a case-by-case basis, allow the discharge of designated hazardous substances in connection with research or demonstration projects relating to the prevention, control, or abatement of hazardous substance pollution. The Administrator will allow such a discharge only where he determines that the expected environmental benefit from such a discharge will outweigh the potential hazard associated with the discharge.

Subpart C—Notice of Discharge of a Reportable Quantity

§ 117.21 Notice.

Any person in charge of a vessel or an onshore or an offshore facility shall, as soon as he has knowledge of any discharge of a designated hazardous substance from such vessel or facility in quantities equal to or exceeding in any 24-hour period the reportable quantity determined by this Part, immediately notify the appropriate agency of the United States Government of such discharge. Notice shall be given in accordance with such procedures as the Secretary of Transportation has set forth in 33 CFR 153.203. This provision applies to all discharges not specifically excluded or reserved by another section of these regulations.

§ 117.22 Penalties.

(a) Any person in charge of a vessel or an onshore or offshore facility who fails to notify the United States Government of a prohibited discharge pursuant to § 117.21 (except in the case of a discharge beyond the contiguous zone, where the person in charge of a vessel is not otherwise subject to the jurisdiction of the United States) shall be subject to a fine of not more than \$10,000 or imprisonment for not more than one year, or both, pursuant to section 311(b)(5).

TABLE 119.5.—Rules of penalty and units of measurement for hazardous substances—
Continued

Material	Category	UM in pounds (kilograms)	P/C/D factor	ROP (dollars per UM)	Approximate ROP (dollars per pound)
Lead arsenate.....	D	5,000 (2,270)	.36	360	.07
Lead chloride.....	D	5,000 (2,270)	.75	750	.15
Lead fluoborate.....	D	5,000 (2,270)	.62	620	.12
Lead fluoride.....	C	1,000 (454)	.36	360	.36
Lead iodide.....	D	5,000 (2,270)	.36	360	.07
Lead nitrate.....	D	5,000 (2,270)	.75	750	.15
Lead stearate.....	D	5,000 (2,270)	.36	360	.07
Lead sulfate.....	D	5,000 (2,270)	.36	360	.07
Lead sulfide.....	D	5,000 (2,270)	.36	360	.07
Lead thiocyanate.....	D	5,000 (2,270)	.75	750	.15
Lindane.....	X	1 (0.454)	.36	360	360.00
Lithium chromate.....	C	1,000 (454)	.49	490	.49
Malathion.....	A	10 (4.54)	.36	360	36.00
Maleic acid.....	D	5,000 (2,270)	.49	490	.10
Maleic anhydride.....	D	5,000 (2,270)	.49	490	.10
Mercuric cyanide.....	X	1 (0.454)	.75	750	750.00
Mercuric nitrate.....	A	10 (4.54)	.75	750	75.00
Mercuric sulfate.....	A	10 (4.54)	.62	620	62.00
Mercuric thiocyanate.....	A	10 (4.54)	.36	360	36.00
Mercurous nitrate.....	A	10 (4.54)	.62	620	62.00
Methoxychlor.....	X	1 (0.454)	.36	360	360.00
Methyl mercaptan.....	B	100 (45.4)	.88	880	8.80
Methyl parathion.....	B	100 (45.4)	.36	360	3.60
Mevinphos.....	X	1 (0.454)	1.0	1,000	1,000.00
Mexacarbate.....	C	1,000 (454)	.36	360	.36
Monoethylamine.....	C	1,000 (454)	1.0	1,000	1.00
Monomethylamine.....	C	1,000 (454)	1.0	1,000	1.00
Naled.....	A	10 (4.54)	.36	360	36.00
Naphthalene.....	D	5,000 (2,270)	.36	360	.07
Naphthenic acid.....	B	100 (45.4)	.75	750	7.50
Nickel ammonium sulfate.....	D	5,000 (2,270)	.75	750	.15
Nickel chloride.....	D	5,000 (2,270)	.75	750	.15
Nickel hydroxide.....	C	1,000 (454)	.36	360	.36
Nickel nitrate.....	D	5,000 (2,270)	.49	490	.10
Nickel sulfate.....	D	5,000 (2,270)	.75	750	.15
Nitric acid.....	C	1,000 (454)	1.0	1,000	1.00
Nitrobenzene.....	C	1,000 (454)	.75	750	.75
Nitrogen dioxide.....	C	1,000 (454)	1.0	1,000	1.00
Nitrophenol.....	C	1,000 (454)	.75	750	.75
Paraformaldehyde.....	C	1,000 (454)	.75	750	.75
Parathion.....	X	1 (0.454)	.36	360	360.00
Pentachlorophenol.....	A	10 (4.54)	.36	360	36.00
Phenol.....	C	1,000 (454)	.75	750	.75
Phosgene.....	D	5,000 (2,270)	.75	760	.15
Phosphoric acid.....	D	5,000 (2,270)	1.0	1,000	.20
Phosphorus.....	X	1 (0.454)	.36	360	360.00

[Sec. 119.5]

TABLE 119.5 - Rates of penalty and units of measurement for hazardous substances--
Continued

Material	Category	UM in pounds (kilograms)	P/C/D factor	ROP (dollars per UM)	Approximate ROP (dollars per pound)
Phosphorus oxychloride	D	5,000 (2,270)	.75	750	.15
Phosphorus pentasulfide	B	100(45.4)	.75	750	.15
Phosphorus trichloride	D	5,000 (2,270)	.75	750	.15
Polychlorinated biphenyls	A	10 (4.54)	.36	360	36.00
Potassium arsenate	C	1,000 (454)	.75	750	.75
Potassium arsenite	C	1,000 (454)	.75	750	.75
Potassium bichromate	C	1,000 (454)	.75	750	.75
Potassium chromate	C	1,000 (454)	.75	750	.75
Potassium cyanide	A	10 (4.54)	.75	750	75.00
Potassium hydroxide	C	1,000 (454)	.49	490	.49
Potassium permanganate	B	100 (45.4)	.75	750	7.50
Propionic acid	D	5,000 (2,270)	1.0	1,000	.20
Propionic anhydride	D	5,000 (2,270)	1.0	1,000	.20
Pyrethrins	C	1,000 (454)	.36	360	.36
Quinoline	C	1,000 (454)	.75	750	.75
Resorcinol	C	1,000(4.54)	.49	490	.49
Selenium oxide	C	1,000 (454)	.75	750	.75
Sodium	C	1,000 (454)	.49	490	.49
Sodium arsenate	C	1,000 (454)	.75	750	.75
Sodium arsenite	C	1,000 (454)	.75	750	.75
Sodium bichromate	C	1,000 (454)	.49	490	.49
Sodium bifluoride	D	5,000 (2,270)	.75	750	.15
Sodium bisulfite	D	5,000 (2,270)	.75	750	.15
Sodium chromate	C	1,000 (454)	.75	750	.75
Sodium cyanide	A	10 (4.54)	.75	750	75.00
Sodium dodecylbenzenesulfonate	C	1,000 (454)	.75	750	.75
Sodium fluoride	D	5,000 (2,270)	.75	750	.15
Sodium hydrosulfide	D	5,000 (2,270)	.75	750	.15
Sodium hydroxide	C	1,000 (454)	.49	490	.49
Sodium hypochlorite	B	100 (45.4)	.75	750	7.50
Sodium methylate	C	1,000 (454)	.49	490	.49
Sodium nitrite	B	100 (45.4)	.75	750	7.50
Sodium phosphate, dibasic	D	5,000 (2,270)	.75	750	.15
Sodium phosphate, tribasic	D	5,000 (2,270)	.75	750	.15
Sodium selenite	C	1,000 (454)	.75	750	.75
Strontium chromate	C	1,000 (454)	.75	750	.75
Strychnine	A	10 (4.54)	.36	360	36.00
Sulfuric acid	C	1,000 (454)	1.0	1,000	1.00
Sulfur monochloride	C	1,000 (454)	.75	750	.75
2,4,5-T acid	B	100 (45.4)	.36	360	3.60
2,4,5-T esters	B	100 (45.4)	.36	360	3.60
TDE	X	1 (0.454)	.36	360	360.00
Tetraethyl lead	B	100 (45.4)	.36	360	3.60
Tetraethyl pyrophosphate	B	100 (45.4)	1.0	1,000	10.00
Toxaphene	X	1 (0.454)	.36	360	360.00
Trichlorfon	X	1 (0.454)	.75	750	750.00
Trichlorophenol	A	10 (4.54)	.36	360	36.00
Triethanolamine					
dodecylbenzenesulfonate	C	1,000 (454)	.75	750	.75
Triethylamine	D	5,000 (2,270)	.88	880	.18
Trimethylamine	C	1,000 (454)	.88	880	.88
Uranyl acetate	D	5,000 (2,270)	.75	750	.15

TABLE 119.5.—Rates of penalty and units of measurement for hazardous substances—
Continued

Material	Category	UM in pounds (kilograms)	P/C/D factor	ROP (dollars per UM)	Approximate ROP (dollars per pound)
Uranyl nitrate	D	5,000 (2,270)	.75	750	.15
Vanadium pentoxide	C	1,000 (454)	.75	750	.75
Vanadyl sulfate	C	1,000 (454)	.75	750	.75
Vinyl acetate	C	1,000 (454)	.88	880	.88
Xylenol	C	1,000 (454)	.36	360	.36
Zinc acetate	C	1,000 (454)	.75	750	.75
Zinc ammonium chloride	D	5,000 (2,270)	.75	750	.15
Zinc borate	C	1,000 (454)	.75	750	.75
Zinc bromide	D	5,000 (2,270)	.49	490	.10
Zinc carbonate	C	1,000 (454)	.36	360	.36
Zinc chloride	D	5,000 (2,270)	.49	490	.10
Zinc cyanide	A	10 (4.54)	.36	360	36.00
Zinc fluoride	C	1,000 (454)	.36	360	.36
Zinc formate	C	1,000 (454)	.75	750	.75
Zinc hydrosulfite	C	1,000 (454)	.75	750	.75
Zinc nitrate	D	5,000 (2,270)	.49	490	.10
Zinc phenolsulfonate	D	5,000 (2,270)	.75	750	.15
Zinc phosphide	C	1,000 (454)	.36	360	.36
Zinc silicofluoride	D	5,000 (2,270)	.75	750	.15
Zinc sulfate	C	1,000 (454)	.49	490	.49
Zirconium nitrate	D	5,000 (2,270)	.75	750	.15
Zirconium potassium fluoride	D	5,000 (2,270)	.75	750	.15
Zirconium sulfate	D	5,000 (2,270)	.62	620	.12
Zirconium tetrachloride	D	5,000 (2,270)	.75	750	.15

§ 119.6 Notice of violation and penalty.

Following a determination by the Regional Administrator as to which of the two alternative penalties set forth in § 119.4 shall be assessed against the owner or operator, the Regional Administrator shall proceed to determine the amount of such penalty in accordance with the provisions of said § 119.4, and shall send a Notice of Violation to each person against whom such penalty is assessed. Such Notice of Violation shall specify the following:

- (a) Date of issuance;
- (b) Nature of the violation, including the substance or substances discharged, the date(s) and place of the discharge, and the quantity of each discharge;
- (c) A citation to the pertinent section of the Act and regulations under which the violation is charged;

(d) A citation to the pertinent section of the act and regulations under which the civil penalty has been assessed;

(e) The amount of the civil penalty;

(f) The right of the alleged violator to present to the Regional Administrator, within thirty (30) days of his receipt of the Notice of Violation, written explanations, information or any materials in answer to the charges (including any of the defenses set forth in section 119.8 hereof) or in mitigation of the penalty;

(g) Manner in which the payment of any money may be paid to the United States;

(h) Right to request a hearing within forty-five (45) days of his receipt of the Notice of Violation; and

(i) The procedures for requesting a hearing including the right to be represented by counsel.

§ 119.7 Third party comments.

The Regional Administrator shall send a copy of the Notice of Violation to the State in which the discharge occurred and to any other person who he has reason to believe would be interested in the proceeding. The State and any interested person may submit written comments within thirty (30) days of receipt of the notice.

§ 119.8 Defenses.

It shall be a defense to any liability for any penalty assessed pursuant to section 119.4 through 119.6 hereof if the alleged violator establishes by a preponderance of the evidence that the discharge for which the penalty was assessed was caused solely by one or more of the following:

- (a) An act of God,
- (b) An act of war,
- (c) Negligence on the part of the United States Government, or
- (d) An act or omission of a third party without regard to whether or not such act or omission was or was not negligent.

§ 119.9 Request for hearing.

Within forty-five (45) days of the date of receipt of a Notice of Violation, the person named in the Notice may request a hearing by submitting a written request signed by or on behalf of such person by a duly authorized officer, director, agent, or attorney-in-fact, to the Regional Administrator.

- (a) Requests for hearings shall:
- (1) State the name and address of the person requesting the hearing;
 - (2) Enclose a copy of the Notice of Violation; and
 - (3) State with particularity the issues to be raised by such person at the hearing.

(b) After a request for hearing which complies with the requirements of subsection (a) of this section has been filed, a hearing shall be scheduled for the earliest practicable date.

(c) Extensions of the time for the commencement of the hearing may be granted for good cause shown.

§ 119.10 Presiding officer.

The hearing shall be conducted by the Presiding Officer. The Regional

Administrator may designate any attorney in the Environmental Protection Agency to act as the Presiding Officer. No person shall serve as Presiding Officer who has any prior connection with the case including without limitation the performance of investigative or prosecuting functions. The Presiding Officer appointed shall have the full authority to conduct the hearing, decide issues, and to prepare a recommended decision in accordance with § 119.14.

§ 119.11 Consolidation.

The Presiding Officer may, in his discretion, order consolidation of any hearings held under this Part and arising within one Region whenever he determines that consolidation will expedite or simplify the consideration of the issues presented. The Administrator may, in his discretion, order consolidation, and designate one Region to be responsible for the conduct of any hearings held under this Part which arise in different Regions whenever he determines that consolidation will expedite or simplify the consideration of the issues presented. Consolidation shall not affect the right of any person to raise issues that could have been raised if consolidation had not occurred. At the conclusion of the hearing the Presiding Officer shall render a separate recommended decision for each separate civil penalty case.

§ 119.12 Prehearing conference.

The Presiding Officer may hold one or more prehearing conferences and may issue a hearing agenda which may include, without limitation, decisions with regard to any or all of the following:

- (a) Stipulations and admissions;
- (b) Disputed issues of fact;
- (c) Hearing procedures including the names of witnesses, scheduling, identification and admission of documentary evidence, and the time allotted for oral arguments; and
- (d) Any other matter which may expedite the hearing or aid in disposition of any issues raised therein.

§ 119.13 Conduct of hearing.

(a) The hearing shall be held, where feasible, in the general location of the facility where the alleged violation occurred or as agreed to by EPA and the person charged. The Presiding Officer shall have the duty to conduct a fair and impartial hearing, to take action to avoid unnecessary delay in the disposition of proceedings, and to maintain order. The person charged with the violation may offer relevant facts, statements, explanations, documents, testimony and other items in defense to the charges, or which may bear

upon the penalty to be assessed. The EPA or appropriate Agency personnel shall have the opportunity to offer facts, statements, explanations, documents, testimony, or other material in order for the Presiding Officer to be fully informed. The person charged with the violation shall be informed in writing of the decision of the Presiding Officer and shall be advised of his right to appeal.

(b) A record shall be kept of the hearing, which shall include at least the following:

- (1) The Notice of Violation;
- (2) Any materials and information relied upon by the Regional Administrator in issuing the Notice of Violation and in determining and assessing the civil penalty or penalties at issue;
- (3) Any materials submitted by the alleged violator in defense or opposition to the penalty;
- (4) A verbatim transcript of the testimony of any witness presented at the hearing, which testimony shall be under oath;
- (5) Any other materials offered by any party to the hearing and admitted by the Presiding Officer; and
- (6) The recommended decision of the Presiding Officer described in § 119.14.

(c) The standards for admission of evidence shall be liberal and permissive. The Presiding Officer may exclude evidence which is immaterial, irrelevant, unduly repetitious or cumulative, or would involve undue delay or which, if hearsay, is not of the sort upon which responsible persons are accustomed to rely. In general, doubtful situations should be resolved in favor of admitting the evidence.

§ 119.14 Decision.

(a) Within thirty (30) days after the conclusion of the hearings, the Presiding Officer shall issue a recommended decision including a recommendation with respect to the amount of the civil penalty. In his recommendation concerning the civil penalty the Presiding Officer shall consider the factors set forth in §§ 119.4 through 119.8. His recommended decision shall contain appropriate findings of fact and conclusions such as to set forth clearly the basis for the recommended decision. A copy of the Presiding Officer's recommended decision shall be sent to the person charged in the Notice of Violation, and to the Regional Administrator.

(b) Within fifteen (15) days of the issuance of the recommended decision of the Presiding Officer the Regional Administrator shall either adopt or modify the recommended decision of the Presiding Officer, in writing, stating his reasons for any modification. The Regional Administrator shall con-

sider only information contained in the record established pursuant to § 119.13(b) of this Part. The recommended decision as thus adopted or modified (hereinafter the "Regional Administrator's decision") shall be sent to the person charged in the Notice of Violation, and shall become the final decision of the Environmental Protection Agency unless within fifteen (15) days from the date of receipt of the Regional Administrator's decision, the person assessed the penalty appeals the decision to the Administrator, or unless the effectiveness of the decision pending review on his own motion.

§ 119.15 Appeal to administrator.

(a) The person assessed a penalty in the Regional Administrator's decision or any interested person who participated in the hearing shall have the right to appeal an adverse decision to the Administrator upon filing a written Notice of Appeal in the form required by paragraph (b) of this section within fifteen (15) days of the date of receipt of the Regional Administrator's decision.

(b) The Notice of Appeal shall be filed with the Regional Administrator and the Administrator, and shall:

- (1) State the name and address of the person filing the Notice of Appeal;
- (2) Contain a concise statement of the facts on which the person relies;
- (3) Contain a concise statement of the legal basis on which the person relies; and
- (4) Contain a concise statement setting forth the action which the person proposes that the Administrator take.

(c) The Administrator, after a Notice of Appeal in proper form has been filed, shall render a decision with respect to the appeal promptly. He may, though he need not, invite briefs or supplemental information from the Regional Administrator and the person(s) charged with the violation. In rendering his decision, the Administrator may adopt, modify, or set aside the decision of the Regional Administrator in any respect and shall include in his decision a concise statement of the basis thereof. The decision of the Administrator on appeal shall be effective when rendered.

(d) The Administrator may be assisted in his functions under this Section by such staff as he deems appropriate (but not a person who has any prior connection with the case including without limitation the performance of any investigative or prosecuting functions), and he may delegate his authority to act under this section to a judicial officer within the Environmental Protection Agency.

Draft

MONITORING FOR TOXIC SUBSTANCES
IN THE WATERS OF NORTH CAROLINA

Report of a
Special Advisory Committee on Research Needs for
Monitoring Toxic Substances in the Waters of North Carolina

Water Resources Research Institute
of The
University of North Carolina

November 1984

MONITORING FOR TOXIC SUBSTANCES
IN THE WATERS OF NORTH CAROLINA

Since Rachel Carson documented the long-term adverse effects of DDT in her book *Silent Spring*, published in 1963, Americans have become increasingly aware of the risk to human health and to fish and wildlife resulting from the widespread use of pesticides, herbicides, and a variety of industrial chemicals. Concern about risks of this type have matured to the point that they have been incorporated in a variety of legislative actions, including the Clean Water Act, the Clean Air Act, the Safe Drinking Water Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act, and "superfund" legislation.

Gross abuses in the disposal of hazardous chemicals at a number of locations across the nation are reported in the media almost daily. Accidental spills and incidents of leaking underground storage tanks are common occurrences. Yet, the extent of the problem in most states, including North Carolina, is poorly understood. Despite these well-publicized events and aggressive legislative action, there has been relatively little systematic monitoring to identify and quantify the nature, magnitude, and extent of contamination from toxic substances. North Carolina, as well as other states, has begun to develop and implement a program for monitoring toxic substances in its water resource, but these efforts are only a beginning.

In February 1984, Dr. David H. Moreau, Director of the Water Resources Research Institute of the University of North Carolina, appointed a special committee to advise the Institute on research needs and priorities necessary to support development of a monitoring program to be implemented by appropriate agencies of state government. Representatives of the University of North Carolina and state agencies were asked to join the committee. Members of the committee were:

Dr. Russell F. Christman, Professor and Chairman of the Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill.

Dr. Alvis G. Turner, Professor, Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill.

David H. Howells, Professor Emeritus, North Carolina State University and member of the North Carolina Environmental Management Commission.

Linda C. Sewell, Assistant Chief, Environmental Health Section, Division of Health Services, NC Department of Health Services

Dr. Ted Taylor, Toxicologist, Environmental Epidemiology Branch, Division of Health Services, NC Department of Human Resources

Forrest Westall, Head, Operations Branch, Water Quality Section, Division of Environmental Management, NC Department of Natural Resources and Community Development (now assigned to Asheville regional office of DEM).

This report begins with an examination of several problems that make the design of a monitoring program a complex undertaking. Then, it covers a brief review of existing monitoring programs in North

Carolina, and concludes with the findings and recommendations of the committee.

The Flow of Toxics in the Environment

Flows of these substances in the environment are depicted in the diagram of the following page. Even at their "sources" toxic substances may exist in heterogenous mixtures, requiring state-of-the-art analytical methods to identify their presence and estimation of their quantities. As they are released into the environment through a variety of transport processes, they undergo physical, physical-chemical, and biochemical transformations and metabolic processes that further complicate identification of their parent compounds and sources. Their effects may be acute, exhibiting easily detected lethal effects on selected organisms. However, many of these substances, particularly those that cause cancer, have effects that result from long term low-level exposures that can be demonstrated only in large-scale animal tests with high dose rates.

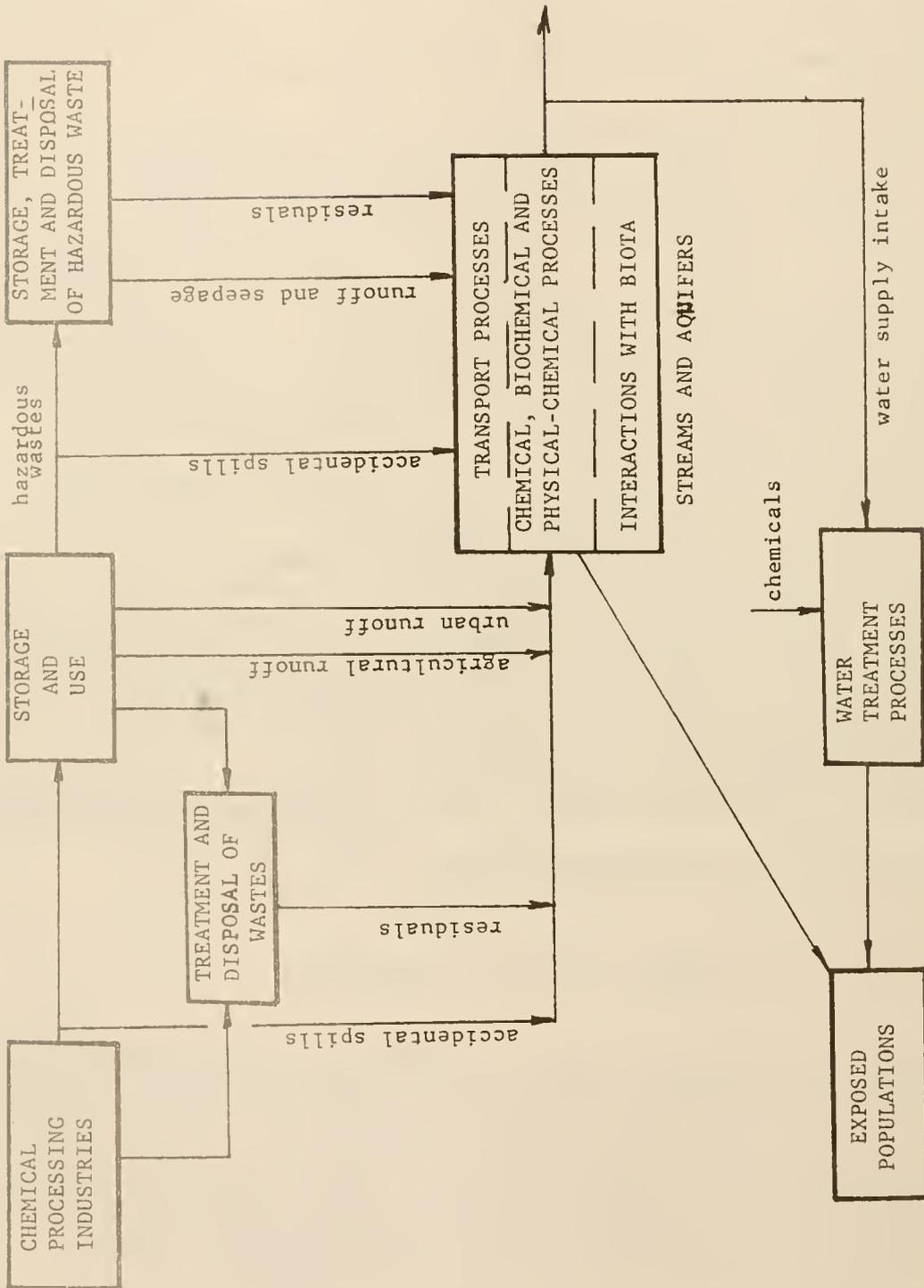
Complexities of this kind present enormous challenges to the development of meaningful monitoring programs. Among the questions that such a monitoring strategy must address are:

- (1) where in the system will measurements be made?
- (2) given the measurement of a substance at a source, what inferences can be made about its fate in the environment, including its degradation products, spatial distribution, and accumulation?
- (3) given the measurement of a substance in the ambient environment, what inference can be made about its precursors and sources?
- (4) at what frequency should measurements be made, and over what averaging intervals should they be taken?
- (5) what techniques should be used for indicating the presence of toxic substances and specific identification of offending compounds?
- and
- (6) what statistical techniques should be used for drawing inferences from data collected in the monitoring system?

Review of Present Monitoring Program in North Carolina

Several water quality monitoring programs are being operated in North Carolina at the present time, including ones operated by state and federal agencies and self-monitoring by water suppliers and waste dischargers subject to state and federal regulations. The principal agencies are: (1) the North Carolina Department of Natural Resources and Community Development (NRCD), Division of Environmental Management (DEM); (2) the North Carolina Department of Human Resources (DHR), Division of Health Services (DHS); and the US Geological Survey (USGS). Programs operated by USGS and DEM also contribute to national water quality networks.

DEM operates an extensive ambient water quality monitoring network which has been in existence for many years. In the 1982-83 biennium it contained 346 stations, 285 in freshwater streams and rivers, the balance in lakes and estuaries. These stations are sampled on a monthly basis with the parametric coverage shown in Table 1. Data from this network are summarized and analyzed for trends in a



series of biennial reports as required under Section 305b of the federal Clean Water Act, the most recent being the 1982-83 report published in 1984 (DEM, Rpt. No. 84-11). DEM also conducts special investigations of ambient water quality conditions. Among those studies that are relevant to the problem of toxic pollutants are a statewide assessment of mercury in the waters of North Carolina (DEM, Rpt. No. 83-02, 1983) and a study of mercury and other metals in the fish of Jordan Lake (DEM, Report No. 83-02, 1983). Thirty-seven of the stations in the ambient quality network operated by DEM are part of the national Basic Water Quality Monitoring Program (BWMP) begun in 1978. In 1979 biological parameters were added to the BWMP program, and in 1982 North Carolina expanded biological monitoring to 75 of the ambient stations. A variety of benthic macro-invertebrates, phytoplankton, and fish tissues are collected annually to assess the biological status and bioaccumulation of toxics at the gaging sites. Data from this subset of stations is summarized in a report issued by DEM in August 1983 (Rpt. No. 83-10).

Monitoring of wastewater discharge is required of each wastewater generator who holds a discharge permit under the National Pollutant Discharge Elimination System (NPDES). Regulations for this monitoring program are established by the Division of Environmental Management (NRCD). Details of these requirements are specified in each permit, but monitoring is required only for those parameters for which effluent limits are prescribed in the permit. Very few toxic substances have been included.

The most significant action by DEM in monitoring for toxics in wastewater discharges has been the implementation of biological toxicity testing. This bioassay procedure, promoted by EPA and adopted in several other states, is an important contribution to the monitoring program. It measures the immediate response of living organisms to a given waste without requiring the identification or quantitative measurement of specific chemicals or speculation about their additive or synergistic effects. Biological assay can also be used as a screening device for chemical analysis. Facilities are screened by collecting 24-hour composite samples of the effluent and performing a 48-hour toxicity test using *daphnia pulex*. Results of this test are used to determine the need for follow-up examinations. Follow-ups involve a 96-hour onsite flow-through test using a mobile bioassay laboratory. During that test chemical and physical data on the effluent are also obtained. As of October 1984, DEM had conducted 194 tests at 133 facilities. Eighty-nine tests had been run at municipal facilities; 45 percent of those tests showed some form of toxicity. The other 105 tests were run on industrial facilities; 70 percent of these tests indicated some form of toxicity (Tedder, 1984).

Bioassay tests also led to further investigations of one group of effluents that indicated severe toxicity problems. Several textiles mills were found to be using biocides that were being carried in the effluents, and further investigation led to the identification of triorganotin compounds as the offending chemical substance (DEM, Rpt. No. 83-09, 1983). The staff of DEM then requested action by the Environmental Management Commission to prohibit the discharge of these compounds into the waters of North Carolina (DEM, April 12, 1984).

In addition to the monitoring programs operated by the state agencies or under their regulations, North Carolina is also engaged in a cooperative water resources data collection program operated by the US Geological Survey. That program has a long history; it has been

operated since 1895 with only an eight-year lapse between 1910 and 1918. In water year 1983 that program covered 147 stream flow gaging stations, 25 stage and content records for lakes and reservoirs, 90 water quality stations, and 60 groundwater observation wells (water level observations). Data from this network is published in a series of USGS reports, the most recent being for 1983 (Hunter, et.al.). Seven of the USGS stations are included in the National Stream Quality Accounting Network. All of these stations are also part of the BWMP program, and some of the chemical and biological data for these stations are supplied to USGS by NRCO. A substantial portion of the water quality data reported by USGS at other locations is also provided by NRCO.

In addition to the networks for monitoring ambient water quality and wastewater effluents, there is an independent program to monitor the quality of drinking water. The Division of Health Services in DHR has responsibility for regulating the quality of drinking water under state and federal statutes. Table summarizes monitoring requirements under these regulations. The North Carolina requirements are the same as the federal ones except that the state also requires monitoring for iron, manganese, and pH. Except for turbidity, sodium, and corrosivity, all of the samples are taken at "representative" points in water distribution systems. All analyses are made by a certified laboratory, either the one operated by the state or through the private sector.

Organic chemical monitoring, of special concern in monitoring for toxic substances, is required only for community water systems that use surface sources. For the six organic chemicals other than trihalomethanes, each of these systems must collect only a single sample every three years. Surface and groundwater systems that serve at least 10,000 persons must monitor for trihalomethanes. However, changes in these regulations are anticipated in the near future. In 1983 EPA published an advanced notice of proposed rulemaking (ANPRM) to revise the National Primary Drinking Water Regulations (NPDWR) (Federal Register, March 4, 1983). Development of revised regulations for the NPDWRs is proceeding in four phases: Phase I - volatile synthetic organic chemicals; Phase II - synthetic organic chemicals, inorganics, and microbial contaminants; Phase III - radionuclides; and Phase IV - disinfectant by-products including trihalomethanes. Phases I, II, and III were initiated in 1983. In June 1984 EPA proposed recommended maximum contaminant levels (RMCLs) for nine volatile synthetic organics as a first step in adopting enforceable regulations for these substances (Federal Register, June 12, 1984). When these RMCLs are adopted as enforceable standards, monitoring and reporting requirements will be specified by EPA.

In addition to the routine monitoring programs outlined above, special studies are conducted by the field staff of DHR in response to incidents of surface and groundwater contamination. One special study of groundwater was undertaken in 1981 by the U.S. Environmental Protection Agency. Forty-four systems in North Carolina were included in the survey. Follow-up samples were taken in 1982. The presence of volatile organic chemicals other than total trihalomethane was confirmed in three of the supplies.

Although they fall outside the domain of water quality monitoring, several research studies completed within the past two years have focused on the problem of toxic substances in the waters of North Carolina. Turner, DiGiano, and DeRosa (1984) identified those

TYPE OF SYSTEM	* INORGANIC CHEMICAL	* ORGANIC CHEMICAL	RADIOLOGICAL	COLIFORM BACTERIA	TURBIDITY	TRIHALOMETHANES	SODIUM	CORROSIVITY
Community Ground (well supplies serving 15 or more year-round residential connections or more than 25 residents)	Analyze every 3 years	Not applicable unless determined by enforcing agency	Natural only. Analyze every 4 years	Analyze monthly	Not applicable	Population 75,000 and over - monitoring began November 1980 Population 10,000-75,000 - monitoring begins November 1982 Population 10,000 or less - not applicable at this time Analyze quarterly unless otherwise designated	Beginning February 27, 1982, analyze one sample per treatment plant every 3 years	Beginning February 27, 1982, analyze one sample per treatment plant by February 1983
Community Surface (River, stream, or lake systems serving 15 or more year-round residential connections or more than 25 year-round residents)	Analyze yearly	Analyze every 3 years	Natural. Analyze every 4 years. Manmade (over 100,000 population). Analyze every 4 years	Analyze monthly	Analyze each day of operation	Population 75,000 and over - monitoring began November 1980 Population 10,000-75,000 - monitoring begins November 1982 Population 10,000 or less - not applicable at this time Analyze quarterly	Beginning February 27, 1982, analyze one sample per treatment plant per year	Beginning February 27, 1982, analyze two samples (one in mid-winter and one in mid-summer) per treatment plant by February 1983
Non-Community (System serving 15 or more non-residential connections or at least 25 people at least 60 days per year)	Nitrates only. Analysis required at discretion of enforcing agency	Not applicable	Not applicable	Analyze quarterly	Surface only. Analyze daily unless otherwise designated	Not applicable	Not applicable	Not applicable

*Inorganic Chemicals - Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Nitrate, Selenium, Silver, Fluoride, Iron, Manganese, pH
*Organic Chemicals - Endrin, Lindane, Methoxychlor, Toxaphene, 2, 4-D, and 2, 4, 5-TP Silvex

public water supplies in North Carolina that were potentially exposed to chemical contamination by virtue of the fact that they were downstream of at least one waste generator for which a waste discharge permit had been issued. While data of this type is little more than suggestive of the possibility of contamination, it does show that a substantial proportion of the population in North Carolina is exposed to contamination if it exists. Also included in that report were estimates of the quantities of pesticides applied to agricultural lands in each of the major river basins.

Two other studies have been devoted to the development and testing of state-of-the-art analytical chemical techniques for the specific identification of synthetic organic chemicals in water. Dietrich, Millington, and Christman (1983) used gas chromatography/mass spectrometry to identify several synthetic organics in Haw River water. Liquid-liquid and resin adsorption methods were used in this study to concentrate samples to levels that were sufficient to detect contaminants in the GC/MS process. A follow-up study is now underway to examine the adequacy of several extraction techniques, to select comprehensive set of standards for evaluating these methods of analysis, and to optimize the set of parameters used for these investigations ((Christman, 1984).

Findings and Recommendations

The State of North Carolina, acting through DEM and DHS, has taken progressive steps to initiate monitoring programs for toxic substances in wastewater and finished drinking water. Data currently available, particularly that obtained from biological monitoring of wastewaters, indicate that the waters of North Carolina are being contaminated by substances that exhibit some forms of toxicity. However, few specific chemicals that cause this toxicity have been identified. EPA policy encourages the use of a combination of biological and chemical methods to address toxic and non-conventional pollutants (Federal Register, March 9, 1984). Specific identification of offending chemicals is necessary before effective corrective action can be taken. The case of organotin compounds illustrates that fact.

Recommendation 1. As a first step the current program of biological monitoring for toxicity should be continued. Expansion is necessary to include a broader range of sources, including nonpoint sources, and to extend coverage to ambient water quality.

Recommendation 2. Whenever toxicity is indicated by biological monitoring, chemical analyses should be used in follow-up investigations until specific substances causing that effect have been identified.

Recommendation 3. As a guide in formulating corrective action, research should be undertaken to identify common classes of sources and chemicals in North Carolina that exhibit toxicity as the biological and chemical data from this monitoring program is generated.

The current program for monitoring ambient water quality does not include a systematic program for the specific identification of

synthetic organic chemicals that may be present in wastewater discharges and in the surface and groundwater in North Carolina. A wide range of such chemicals have been found in the few selected samples taken for research projects which have focused on the development of analytical chemistry methods. These projects were neither designed to determine the frequency of occurrence and spatial distribution of contaminants, nor were they used in a program to assess their implications on human health and ecological damage.

Many of the substances of concern would not exhibit toxic effects as measured by the biological monitoring program, and, thus, would otherwise go undetected. It is well-known that health risks associated with known "carcinogens" cannot be demonstrated when test organisms are exposed to the low concentrations of these substances found in the ambient environment. Effects are caused by the cumulative exposure to low doses over long periods of time. Scientific principles for assessing the risks of such exposures have evolved from a long series of expert committees in the 1960s and 70s. In the first volume of Drinking Water and Health (1977) the Safe Drinking Water Committee of the National Academy of Sciences cited a number of these principles as guides to EPA programs affecting water quality. Among others the Committee stated that:

- (1) animal experiments, properly qualified, can be used to make inferences about health effects on humans; and
 - (2) exposure to test animals at high dose rates is a necessary and valid method for discovering carcinogenic hazards to humans.
- Thus, laboratory experiments on test animals is both necessary and recognized as a scientifically valid method for assessing risks of cancer. It is unlikely that the State of North Carolina would be in the position of undertaking large-scale animal testing programs, but it is feasible for the state to determine the levels to which humans, fish and wildlife are exposed to such chemicals. Nationally funded research studies can then be used to make valid inferences about health risks.

In the search for chemicals of this type that may find their way into the waters of North Carolina, it is both expensive and inefficient to rely solely upon monitoring programs to identify specific compounds. State-of-the-art analytical chemical methods are expensive to operate, and there is no known procedure that will insure detection of all potentially harmful substances when they are present in heterogeneous mixtures of water and other substances in wastewaters and ambient conditions. The most cost-effective method for identifying potentially harmful materials is to require full disclosure of all substances used by chemical processors who discharge to streams and publically owned waste collection systems. Such an approach raises a number of legal issues pertaining to the "right-to-know" and protection of confidentiality of proprietary information.

Recommendation 4. DEM and DHS should implement a systematic monitoring program to specifically identify synthetic organic chemicals in wastewater discharges and in the surface and groundwaters of North Carolina. The monitoring network should cover each of the major river basins with priority given to those segments of streams and groundwater aquifers that are used for public drinking water supplies. The program should not be limited to those chemicals that appear in one or more lists of substances prepared by the state and

federal governments, but analytical methods should include broad-band techniques capable of detecting a wide range of substances.

Recommendation 5. Research should be undertaken to formulate alternative approaches to implement disclosure of chemical substances used in activities that result in the discharge of waste to publically-owned waste management systems and directly to streams in the state. Legal bases for these approaches should be identified, including any necessary changes to current statutes.

Recommendation 6. Research should be undertaken to improve existing analytical methods and adapt these methods to the physical and chemical characteristics of North Carolina waters.

Recommendation 7. As these monitoring networks are put into place, research should be undertaken to identify those substances that occur with sufficient frequency and magnitude as to cause concern for human health and ecological damage. Studies should also be undertaken to identify probable precursors and sources of substances so identified.

References

Water Quality Progress in North Carolina - 305b Report, DEM, NRCDD, Report No. 84-11, July 1984

Basic Water Monitoring Program - Data Review 1981-82, DEM, NRCDD, Report No. 83-10, August 1983.

An Assessment of Mercury in North Carolina, DEM, NRCDD, Report No. 83-02, January, 1983.

Mercury and Other Metals in the Fish of B. Everett Jordan Lake, NC. DEM, NRCDD, Report No. 83-11, December, 1983.

H.,C. Hunter, C.L. Hill, and T.E. Dillard, Water Resources Data - North Carolina, Water Year 1983, US Geological Survey Water-Data Report NC-83-1, USGS, Raleigh, NC 1983.

Steve. W. Tedder, "Statewide Toxics Program in North Carolina", testimony presented on behalf of the NC Department of Natural Resources and Community Development, Division of Environmental Management, to the Haw River Legislative Study Commission, October 26, 1984.

Investigation of the Effects and Uses of Biocides and Related Compounds in North Carolina. DEM, NRCDD, Report No. 83-09, September 1983.

Triorganotin Compounds: A Request for Prohibition of Discharge to Surface Waters, DEM, April 12, 1984)

Turner, A.G., DiGiano, F.A. and DeRosa, P.M., A Survey of Potential Population Exposures to Chemical Contaminants Present in Unprotected Surface Water Supplies in North Carolina, Report No. 213, The Water Resources Research Institute of the University of North Carolina,

Raleigh, NC, January 1984.

Dietrich, A.M, Millington, D.S., and Christman, R.F., Specific Identification of Organic Pollutants in Haw River Water Using Gas Chromatography/Mass Spectrometry, Report No. 206, The Water Resources Research Institute of the University of North Carolina, Raleigh, NC, August 1983.

Christman, Russell F., Evaluation of Synthetic Organic Chemicals in North Carolina Source and Finished Water Supplies: Methods Development and Preliminary Synthetic Organic Chemical Investigations, a proposal to the Water Resources Research Institute of the University of North Carolina, May 1984.

APPENDIX D

STATE OF NORTH CAROLINA
LEGISLATIVE RESEARCH COMMISSION
STATE LEGISLATIVE BUILDING
RALEIGH 27611



31 October 1984

Ms. Regina McLaurin
Chairman, Wake County
Planning Board
116 Byrum St.
Cary, N.C. 27511

Dear Ms. McLaurin:

On behalf of Representative Joe Hackney and Senator Russell Walker, Chairmen of the Haw River and Jordan Reservoir Water Quality Study Committee, I would like to extend an invitation to you to appear and speak before the Committee at its next meeting in Room 1228 of the Legislative Building on November 14, 1984, at 10:00 a.m.

The topic for discussion will be the role of local and regional planning in providing for water quality in the Haw basin and Jordan Reservoir.

The Committee would like to hear your views on any pertinent issues, including the following:

1. Your views on the role of the State government in planning for water quality;
2. Particular water quality problems you may have, such as toxic substances and leaking underground storage tanks;
3. Your opinions on the device of establishing water quality critical zones surrounding bodies of water;
4. Initiatives you may have undertaken to improve planning for water quality; and
5. Suggestions that you have to improve water quality planning at the local level or with State government help.

Ms. Regina McLaurin
Page 2
21 October 1984

Since time is relatively short, I would appreciate it if you would get in touch with me as soon as possible so that your name--or the name of someone speaking on your behalf-- can be placed on the agenda. If you have prepared remarks, please make about thirty copies so that all the Committee members and audience can have copies. This also allows for your remarks to be entered in a permanent form in the Committee report.

I appreciate your cooperation on this matter and am looking forward to speaking or hearing from you soon to arrange your appearance.

Sincerely,

Daniel Long
Committee Counsel
545 Legislative Office Building
Raleigh, N.C. 27611
(919)-733-2578

DL:p

cc: Rep. Joe Hackney
Sen. Russell Walker

A REPORT TO THE
HAW RIVER AND JORDAN RESERVOIR WATER QUALITY STUDY COMMITTEE

FROM
Regina McLaurin, Chairman
Wake County Planning Board

Thank you for the opportunity to appear and speak before your committee. Wake County is concerned about the water quality in Jordan Reservoir as well as other potential and existing water supply reservoirs. The County is presently in the process of enacting watershed protection regulations in the portion of the County in the Jordan Reservoir Watershed.

The County has already enacted watershed protection regulations in the Falls of the Neuse Basin, Swift Creek Basin, and Smith's Creek Basin (Wake Forest's primary water supply source).

Following are my views concerning pertinent issues listed in Mr. Long's letter.

First, with respect to the role of State government in planning for water quality, my views are that State government should coordinate, advise, and comment, but that planning and the development of land-use controls should be left up to the local units of government.

Second, with respect to specific water quality problems in Wake County, we are not aware of any problem spots where toxic substances are feeding directly into water supply reservoirs or streams flowing into water supply reservoirs. However, we are well aware of the development in our water supply watersheds and realize the potential for pollutants reaching our reservoirs in stormwater runoff. We are also well aware of the possibility of accidental leaks of toxic substances into our water supply sources.

Third, with respect to water quality critical zones the county has implemented this concept in the Falls and Smith's Creek basin and is considering it for the Jordan and Swift Creek Basin.

Fourth, with respect to initiatives we have undertaken to improve planning for water quality, let me briefly describe our watershed protection regulations. They are two new residential zoning districts - Residential-80 Watershed (R-80W) and Residential-40 Watershed (R-40W) Districts. R-80W requires an 80,000 square feet minimum lot size (just less than two acres) and R-40W requires 40,000 square feet minimums. R-80W is used for those areas nearest to the

lake, the water quality critical areas. Standards in both districts require retention of the first one-half inch of stormwater runoff and 50 feet wide vegetated buffers on either sides of streams. We feel that these regulations achieve a great deal in protecting water quality.

Fifth, with respect to suggestions we have to improve water quality planning at the local level and with State government we offer that (1) closer coordination of land-use control techniques be maintained between involved local units of government and the state, (2) erosion control regulations be enacted by local governments not presently having them and that such regulations be more vigorously enforced by those who do have them, and (3) all farmers use best management practices on all agricultural uses. These ideas received the support of the Wake County Board of Commissioners, in the Neuse River Watershed, as evidenced in the attached resolution.

RESOLUTION REGARDING NEUSE RIVER WATERSHED

WHEREAS, the County of Wake has an interest in preserving the water quality of water supply sources, and

WHEREAS, the Neuse River Watershed is a water supply source for Wake County and various communities downstream, and

WHEREAS, since the Neuse River crosses various County boundaries, its quality must be controlled by the State.

NOW, THEREFORE, BE IT RESOLVED by the Wake County Board of Commissioners:

1. That the State of North Carolina be requested to declare the entire Neuse River Watershed nutrient sensitive and that the river be classified A2B. That the State ask all counties and cities, in the Neuse River Watershed, to establish and enforce erosion control ordinances and urge all farmers to use best management practices on all agricultural uses.

Commissioner Heater moved the adoption of the foregoing resolution. Commissioner Knudsen seconded the motion and, upon vote, the motion passed, this the 3rd day of October, 1983.

THIS INSTRUMENT APPROVED AS TO FORM

Michael P. Turner
WAKE COUNTY ATTORNEY

10-3-83

DATE

TRIANGLE J COUNCIL OF GOVERNMENTS

100 PARK DRIVE P.O. BOX 12276 RESEARCH TRIANGLE PARK, NC 27709 (919) 549-0551

Remarks to the Legislative Study Committee on Haw River and Jordan Lake Water Quality

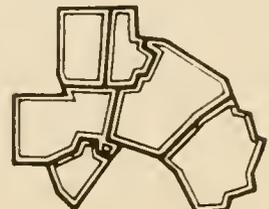
November 14, 1984

Edward A. Holland - Director, Resource Conservation Triangle J Council of Governments Research Triangle Park, NC

GOOD MORNING - REPRESENTATIVE HACKNEY, SENATOR WALKER, AND MEMBERS OF THE COMMITTEE. LAST JANUARY I SPOKE TO YOU AND MENTIONED GUIDELINES THAT OUR ORGANIZATION WAS ADVOCATING - ALONG WITH NRCD - FOR PROTECTING JORDAN LAKE AND FALLS RESERVOIR FROM THE HARMFUL WATER QUALITY EFFECTS OF INTENSIVE RESIDENTIAL AND COMMERCIAL DEVELOPMENT. THOSE GUIDELINES INCLUDED THE DESIGNATION OF WATER QUALITY CRITICAL AREAS ONE MILE AROUND EACH LAKE - IN WHICH NEW DEVELOPMENT WOULD RETAIN A LOW DENSITY, RURAL RESIDENTIAL CHARACTER WITH NO NEW INDUSTRIAL DEVELOPMENT. SUCH A PATTERN WOULD BE ACHIEVED THROUGH LOCAL REGULATIONS ON ALLOWABLE PAVEMENT AND BUILDING COVERAGE, PLUS LOCAL SEWER EXTENSION POLICIES DIRECTING URBAN GROWTH AWAY FROM THE CRITICAL AREAS. LESS RESTRICTIVE GUIDELINES WERE SUGGESTED FOR OTHER PORTIONS OF THE WATERSHED. ALL COMMUNITIES WERE URGED TO ADOPT CERTAIN STORMWATER CONTROL AND STREAM BUFFER STANDARDS.

(MORE)

- APLEX • BENSON • BROADWAY • CARRBORO • CARY • CHAPEL HILL
CLAYTON • DURHAM • FOUR OAKS • LUQUAY-VARINA • GARNER
GOLDSTON • HILLSBOROUGH • HOLLY SPRINGS • KENNY • KNIGHTDALE
MICRO • MORRISVILLE • PINE LEVEL • PITTSBORO • PRINCETON
RALEIGH • ROLESVILL • SANFORD • SILMA • SILVER CITY
SMITHFIELD • WAKE FOREST • WENDELL • ZEBULON
CHATHAM COUNTY • DURHAM COUNTY • JOHNSTON COUNTY
LEE COUNTY • ORANGE COUNTY • WAKE COUNTY



THE CITIES AND COUNTIES CLOSEST TO FALLS AND JORDAN LAKES HAVE MADE SUBSTANTIAL PROGRESS SINCE LAST JANUARY ADOPTING OR MODIFYING LOCAL ORDINANCES THAT SATISFY THE RECOMMENDED GUIDELINES. OUR STAFF AT TRIANGLE J HAS BEEN PRIVILEGED TO WORK CLOSELY WITH MANY OF THOSE COMMUNITIES AS THEY TACKLED THESE ~~VERY~~ DIFFICULT AND CONTROVERSIAL ISSUES. IN NO CASE HAS THE PROCESS OF EDUCATION ^{and POLICY CHANGE} AND PERSUASION BEEN EASY. IN FACT, IT'S STILL GOING ON TODAY IN SEVERL JURISDICTIONS.

LAST JANUARY, YOU ASKED MY OPINION ABOUT THE NEED FOR TOP-DOWN, STATE-MANDATED DEVELOPMENT STANDARDS TO PROTECT WATER SUPPLY WATERSHEDS. AT THAT TIME I RECOMMENDED FIRST TRYING THE ROUTE OF VOLUNTARY LOCAL ADOPTION OF WATERSHED PROTECTION MEASURES. SINCE LAST JANUARY, I'VE BEEN PLEASANTLY SURPRISED BY THE VIGOR AND PROGRESS DISPLAYED BY CITIES AND COUNTIES AROUND FALLS AND JORDAN. PROGRESS HAS BEEN REAL AND SUBSTANTIAL.

RATHER THAN A MANDATING LOCAL STANDARDS, I THINK THE STATE'S ROLE SHOULD BE TO ISSUE GUIDLINES AND PROVIDE RELIABLE TECHNICAL ASSISTANCE TO LOCAL GOVERNMENTS - AND REGIONAL AGENCIES SUCH AS TRIANGLE J - INTERESTED IN WATERSHED PROTECTION. THE STATE CAN HELP SUSTAIN PROGRESS AND UNIFORMITY AMONG JURISDICTIONS BY PERIODICALLY REVIEWING AND COMMENTING ON LOCAL PROGRAMS. THERE'S A DEFINITE NEED FOR A CLEARINGHOUSE OF STATE-OF-THE-ART

(MORE)

INFORMATION AND APPROACHES ON: STORMWATER MANAGEMENT TECHNIQUES, HAZARDOUS MATERIALS CONTAINMENT & CLEANUP, UNDERGROUND PETROLEUM STORAGE, INNOVATIVE ZONING AND GROWTH MANAGEMENT TOOLS, AND SO FORTH.

AS FAR THE STATE'S ROLE, I WOULD RECOMMEND A FOCUS ON GUIDANCE FOR CRITICAL AREA DESIGNATION AND FOR WATER AND SEWER EXTENSION POLICIES IN WATER SUPPLY WATERSHEDS. I WOULD ALSO RECOMEND A LIMITED AMOUNT OF FUNDING FOR LOCAL OR REGIONAL AGENCIES TRYING TO GET THESE SPECIFIC POLICIES AND PRACTICES IN PLACE.

WE KNOW THE TOOLS FOR WATER SUPPLY PROTECTION EXIST. THE REAL CHALLENGE IS TO GET THOSE TOOLS IN THE HANDS OF THE LOCAL FOLKS WHO NEED THEM.

THANK YOU VERY MUCH.

MEMORANDUM

To: Members of the Haw River and Jordan Reservoir Water Quality Study Committee
From: Alice Gordon, Chair, Orange County Planning Board *ANG*
Subject: Water Supply Watershed Protection in Orange County
Date: November 14, 1984

For your information I am attaching existing and proposed provisions of the Orange County Zoning Ordinance.

1. Adopted ordinance provisions which regulate protected watershed districts.
2. Proposed ordinance amendments for protected watershed districts and proposed provisions for water quality critical areas.

In my presentation I will comment upon the Orange County ordinance provisions and offer my opinions concerning the role of local and regional planning in providing for water quality in the Haw basin and Jordan Reservoir.

ORANGE COUNTY
ZONING ORDINANCE

prepared by the
Orange County Planning Department

ADOPTED BY THE BOARD OF COMMISSIONERS
SEPTEMBER 2, 1981
AMENDED NOVEMBER 2, 1981
NOVEMBER 23, 1981
JANUARY 19, 1982
JULY 6, 1982
OCTOBER 4, 1982
FEBRUARY 7, 1983
JULY 5, 1983
JANUARY 3, 1984
APRIL 17, 1984
JUNE 4, 1984
JULY 2, 1984

*4.2.27 Protected Watershed II (PW-II District)

a) Intent

It is the intent of Orange County to regulate the uses of land and structures in watersheds which drain to reservoirs supplying drinking water to the people of Orange County. The quality of water in these water supply watersheds can be affected by the activities of man including farming, construction of highways and rural subdivisions and the growth of towns and industrial development. Types of water pollutants resulting from these activities include sediment, bacterial contamination, heavy metals, synthetic organic compounds and low-level radioactivity. A Task force appointed by the County Commissioners has studied the problems of water pollution. They have documented their findings in a report entitled Report of the Orange County Water Resources Task Force and dated May, 1981. That statement of problems and needs is included by reference. The intent of the Protected Watershed II (PW-II) district is to apply a set of regulations for watershed protection to portions of water-supply watersheds in the County which are presently mostly undeveloped and where it is desirable to maintain the rural undeveloped character of the watershed in the future.

*Amended
7/6/82

b) Application Criteria

The Protected Watershed II (PW-II) district is established as a district which overlays other zoning districts established in this ordinance. The new use of any land or any new structure within the Protected Watershed II (PW-II) district shall comply with use regulations applicable to the underlying zoning district as well as the requirements of the PW-II district.

1. This district will be applied to the University Lake and Cane Creek watersheds designated in the Land Use Plan.

*6.23 Extra Requirements For Protected Watershed Districts (PW-II)

*6.23.1 Stream Buffers Required in Protected Watersheds

Within the Protected Watershed District, an area of land along perennial streams shall be required to remain in its natural state, unless the area is subject to serious erosion in which case an erosion resistant vegetative cover shall be established and maintained. Perennial streams are those streams in solid blue on the USGS Quadrangel map for Orange County.

*6.23.1 a) Width of Buffer Calculated

The stream buffer area shall start at the outer edge of flood plain and be measured a distance of fifty (50) feet away from the flood plain plus an additional distance depending on the slope near the stream. The slope shall be calculated by measuring a distance 250 feet from the center of the stream, determining the average rise in elevation and multiplying that value by four. This value shall be added to the minimum buffer of 50 feet to determine total width of buffer area required. The maximum buffer in any case shall not exceed 150 feet. The flood plain is defined in the Orange County Flood Damage Prevention Ordinance by special survey by registered engineers or surveyors, by the alluvial soil as designated in the Orange County solid survey, or through a site analysis by the Orange County Planning Staff. Slope shall be determined from the USGS Quadrangle map, by on-site measurements, or, by special survey by registered engineers or surveyors.

* 6.23.1 b) Development Advisory Committee's Review of Stream Buffers

The Development Advisory Committee established in Article 2.4.2, can review the buffer requirements for all developments and may recommend additional buffer area where necessary.

*6.23.1 c) Permitted Uses Within Stream Buffer Areas

The following uses are allowed as a matter of right in stream buffers. All other uses are prohibited.

1. Above ground and buried utility lines for local distribution of electricity, telephone, and cable television service, accessory and appertent apparatus such as poles, guy wires, transformers and switching boxes.
2. Bona fide farms except any use of farm property for non-farm purposes.
3. Neighborhood utility facilities located within a public right of way with the permission of the owner of the right of way (State, City or Town).
4. Public and private streets, bridges, and railroad rights of way. Where it is necessary to construct streets, bridges, and railroad lines across buffer areas, they shall enter and exit the area so near-by perpendicular to it as possible.

*6.23.1 d) Stream Buffers Included As Part of Minimum Lot Size Requirements

Stream Buffers may be used as part of the required lot area or lot size for residential and non-residential developments.

*6.23.1 e) Existing Vegetation In Buffer Areas

Existing forested areas or any healthy vegetation can not be removed from a stream buffer except when replaced with vegetation resulting in comparable storm water run off velocity and quantity one year after planting.

*6.23.1 f) New Vegetation In Buffer Areas Required

New vegetation shall be planted to capture non-source pollutants before they reach the perennial stream, as per applicable Orange County standards.

*6.23.3 Reserved

*6.23.4 Impervious Surface Regulated in Protected Watersheds

An impervious surface is any surface through which water cannot penetrate or can only penetrate slowly. This would include paved streets and parking lots, concrete sidewalks, and structures which cover land. As a watershed becomes developed, the amount of impervious surface increases causing a decrease in soil absorption of storm water and an increase in direct runoff to streams with a resulting increase in potential water pollution.

*6.23.4 Impervious Surface Regulated in Protected Watersheds

In order to promote infiltration of storm water into the maximum soil and minimize direct and immediate runoff into streams impervious surface ratios shall be required in Protected Watershed II (PW-II) District.

* MAXIMUM IMPERVIOUS SURFACE RATIOS - OF GROSS LAND AREA

ZONING DISTRICT	LUI	RESIDENTIAL	NON-RESIDENTIAL DEVELOPMENT
AR	22	6.0%	6.0%
	22	6.0%	6.0%
RI	22	6.0%	6.0%
	22	6.0%	6.0%
R2	24	6.5%	6.5%
	26	7.0%	7.0%
R3	28	8.9%	8.9%
	30	10.0%	10.0%
R4	33	14.2%	14.2%
R5	38	17.0%	17.0%
	40	19.3%	19.3%
R8	43	22.0%	22.0%
	45	24.5%	24.5%
R13	50	31%	31.0%
LC1	30	10.0%	11.3%
	32	11.8%	11.3%
NC2	40	18.3%	18.3%
	42	21.0%	21.0%
CC3	50	31.0%	31.0%
	52	34.4%	34.4%
GC4	53	35.0%	26.0%
	55	39.4%	39.4%
EC5	53	36.0%	36.0%
	55	39.4%	39.4%
CI	40	18.3%	18.3%
	42	21.0%	21.0%
EI	23	6.3%	6.3%
	25	6.3%	6.3%
II	23	6.3%	6.3%
	25	6.3%	6.3%
I2	45	24.5%	24.5%
	47	27.0%	27.0%
I3	50	31.0%	31.0%
	52	34.4%	34.4%
AS	—	6.0%	6.0%
	—	6.0%	6.0%
ED	—	6.0%	6.0%
	—	6.0%	6.0%
PD	—	6.0%	6.0%
	—	6.0%	6.0%

*Amended
7/6/32

PROPOSED AMENDMENTS TO
ORANGE COUNTY ZONING ORDINANCE
NOVEMBER 1984

PLANNING BOARD REVISIONS TO PROPOSED AMENDMENTS TO ARTICLES 4, 5, 6 and 7

ARTICLE 4 ESTABLISHMENT OF PERMITTED USE TABLE AND SCHEDULE

4.2.28a) Intent, line 5 should read " . . . water supply impoundments can be affected by human acitivities"

4.2.29a) Intent, line 6 should read " . . . Performance standards will be used to minimize the adverse impacts"

4.2.29b) 2. should read " . . . shall be a minimum of five acres."

ARTICLE 5 ESTABLISHMENT OF DIMENSIONAL REQUIREMENTS

Change Minimum Lot Area/Use and Minimum Gross Land Area to 200,000 for both Lot and PD.

ARTICLE 6 APPLICATION OF DIMENSIONAL REQUTREMENTS

6.23.5 Minimum Lot Size Regulated, line 3 should read:
" . . . size for an industrial use shall be five (5) acres"

ARTICLE 7 PLANNED DEVELOPMENT DISTRICTS

7.19.1.1 line 1 should read "Permit development"

Minimum Area Required for Establishment of District line 2 should read " . . . less than five (5) acres."

Article 4. ESTABLISHMENT OF PERMITTED USE TABLE AND SCHEDULE

4.2.27 Protected Watershed II (PW-II) District

b) Application Criteria

2. Where applicable the requirements of the Water Quality Critical Area shall supercede or supplement the requirements of the PW-II District as specified in Section 6.23.

4.2.28 Water Quality Critical Area (WQCA District)

a) Intent

It is the intent of Orange County to regulate the use of land and structures in the portions of water supply watersheds which are immediately adjacent to the water supply impoundments. The quality of water in these water supply impoundments can be affected by the activities of man, including farming, construction, non-residential growth, especially in the areas closest to impoundments. The intent of the Water Quality Critical Area (WQCA District) is to apply a set of regulations for water supply protection to portions of the water supply watersheds which drain directly to water supply impoundment and which drain directly to the main channels of trunk streams feeding the impoundments so as to establish higher development standards in these areas.

b) Application Criteria

The Water Quality Critical Area (WQCA District) is established as a district which overlays other zoning districts established in this ordinance. The new use of any land or any new structures within the Water Quality Critical Area (WQCA District) shall comply with use regulations applicable to the underlying zoning district, as well as the requirements of the WQCA district.

1. This district will be applied to portions of protected water supply watersheds as designated in the Land Use Plan.
2. This district shall comply with use regulations applicable under the Protected Watershed II (PW-II) overlay district.

4.2.29 Protected Watershed Industrial (PWI) District

a) Intent

The intent of the Protected Watershed Industrial (PWI) District is to provide appropriately located and sized sites within the protected watershed area for limited industrial uses engaged in manufacturing, processing, creating and assembling of goods, merchandise or equipment. Performance standards will be used to insure the absence of adverse impacts of the use on the quality of water in the water supply watershed. The location of the district is recommended in areas within the least environmentally sensitive areas of the protected watershed area.

b) Application Criteria

This district will usually be applied where the following conditions exist:

1. The site is located in the Protected Watershed-II (PW-II) district.
2. Lot size for individual uses shall be a minimum of ten acres.

3. Access to the site shall consist of direct vehicular access to streets designated either arterial or collector in the Orange County Land Use Plan. The developer must show that the existing facilities are adequate to handle the proposed weight and amount of traffic or has an agreement with NCDOT to upgrade the facility to accommodate expanded needs. Access to rail service is desirable, but not required.
4. The use is "dry" in nature and shall not use, produce, store, consume or discharge any hazardous or toxic substances in their manufacturing processes in quantities equal to or exceeding the amounts specified in the most current EPA list of Hazardous Substances and Priority Pollutants. The applicant shall provide a complete description of substances used or produced in the manufacturing processes.
5. Sewage disposal proposed for the district shall be appropriate for the use.

ARTICLE VI

APPLICATION OF DIMENSIONAL REQUIREMENTS

6.23

Extra Requirements for Protected Watershed Districts

6.23.5

Minimum Lot Size Regulated

The minimum lot size for a commercial use in the Protected Watershed District shall be two (2) acres. The minimum lot size for an industrial use shall be ten (10) acres. The minimum residential lot size shall be determined by the wastewater treatment system applicable.

6.23.6

Industrial Development Regulated

To assure compatible industrial development in the Protected Watershed II (PW-II) District only light industrial uses characterized as low water users and not using, producing, storing, consuming or discharging amounts of hazardous and toxic substances in excess of the amounts specified in the EPA listings are permitted. No industrial uses shall be permitted in the portions of the PW-II District designated as Water Quality Critical Area.

6.23.7

Infiltration of the First ½ Inch of Runoff from Impervious Surfaces

Stormwater runoff carries large amounts of oil, nutrients, metals, bacteria and other pollutants. The quality of stormwater runoff is closely associated with the land use from which it originates. The most significant factor is the increase of impervious surfaces which prevent the natural infiltration of water into the soil. Most of the pollutant concentration is carried in the "first flush" of runoff. To control this pollutant load within the Water Quality Critical Areas the first half-inch of runoff from all impervious surfaces in new developments shall be infiltrated on-site. Developers shall be required to submit documentation which indicates compliance with the specified standard.

6.23.8

Percentage of Undisturbed Area Regulated

Soils which are seriously disturbed, even if revegetated, can generate nearly as much runoff as paved areas. Within Protected Watershed II districts at a minimum the amount of undisturbed area necessary to meet impervious surface requirements provided in 6.24.6 shall remain undisturbed during the construction process. The area to remain undisturbed shall include those portions of the lot which are most environmentally sensitive eg. highly erodible soils, steep slopes, floodplains, as well as those portions of the lot utilized for stormwater infiltration. All clearing limits shall be clearly marked and observed. However, no less than 50% of a lot used for non-residential purposes shall remain undisturbed.

6.24

Extra Requirements For Water Quality Critical Areas

6.24.1

Minimum Lot Size Regulated

The minimum residential lot size in Water Quality Critical Areas shall be two (2) acres. Commercial and industrial uses are not permitted.

6.24.2

Stream Buffers Required in Water Quality Critical Areas

Within the Water Quality Critical Area, an area of land along perennial and intermittent streams shall be required to remain in its natural state, unless the area is subject to serious erosion in which case erosion resistant improvements to the vegetative cover shall be established and maintained. Perennial streams are those streams shown in solid blue on the USGS Quadrangel maps for Orange County; intermittent streams are those streams shown by broken blue lines on the same maps.

D-21

6.24.3

Width of Buffer Calculated

The stream buffer area shall be calculated as provided in Section 6.23.1 a) except that no maximum buffer shall be specified.

6.24.4

Distance of Structures from Water Supply Impoundment

Within Water Quality Critical Areas, no structures may be constructed within 150 feet of the high water mark of the water supply impoundment.

6.24.5

Location of Septic Tanks and Nitrification Fields

Within Water Quality Critical Areas new septic tanks and their nitrification fields shall be located a minimum of 300 feet from the edge of a water supply impoundment or perennial or intermittent stream as shown on the USCS Quadraegel maps for Orange County.

6.24.6

Impervious Surface Regulated in Protected Watersheds

An impervious surface is any surface through which water cannot penetrate or can only penetrate slowly. This would include paved streets and parking lots, concrete sidewalks, and structures which cover land. As a watershed becomes developed, the amount of impervious surface increases causing a decrease in soil absorption of stormwater and an increase in direct runoff to streams and water supply impoundments. In order to promote infiltration of stormwater runoff into the soil and minimize direct and immediate runoff into streams and water supply impoundments impervious surface ratios shall be required as provided in Section 6.23.4.

6.24.7

Percentage of Undisturbed Area Regulated

Soils which are seriously disturbed, even if revegetated, can generate nearly as much runoff as paved areas. Within Water Quality Critical Areas at a minimum the amount of undisturbed area necessary to meet impervious surface requirement provided in 6.24.6 shall remain undisturbed during the construction process. The area to remain undisturbed shall include portions of the lot which are most environmentally sensitive as well as those portions of the lot utilized for stormwater infiltration. All clearing limits shall be clearly marked and observed.

6.24.8

Infiltration of the First $\frac{1}{2}$ Inch of Runoff from Impervious Surfaces

Stormwater runoff carries large amounts of oil, nutrients, metals, bacteria and other pollutants. The quality of stormwater runoff is closely associated to the land use from which it originates. The most significant factor is the increase of impervious surfaces which prevent the natural infiltration of water into the soil. Most of the pollutant concentration is carried in the "first flush" of runoff. To control this pollutant load within the Water Quality Critical Areas the first half-inch of runoff from all impervious surfaces in new developments shall be infiltrated on-site. Developers shall be required to submit documentation which indicates compliance of the proposed development with the specific standard.

ARTICLE V ESTABLISHMENT OF DIMENSIONAL REQUIREMENTS

5.1.1.2 SCHEDULE FOR NON-RESIDENTIAL DEVELOPMENT LOT BY LOT, PLANNED DEVELOPMENT

MIN LOT AREA USE	MIN LOT WIDTH	REQ FRONT SETBACK	REQ. SIDE/REAR SETBACKS	MAX BLDG HEIGHT	MIN GROSS LAND AREA	MAX GROSS LAND AREA	LUI	MAX FLOOR AREA RATIO	REQ MIN OPEN SPACE RATIO	REQ M PEDES LANDS RATIO
WI LOT	400,000	200	50	50	400,000	-----				
PD	400,000	-	-	45	400,000	-----	.43	.246	.75	.30

D-23

ARTICLE 7. PLANNED DEVELOPMENT DISTRICTS

7.2.1 Establishment of the Planned Development Districts

PWI - PD - PWI

7.19 PD-PWI PLANNED DEVELOPMENT - PROTECTED WATERSHED INDUSTRIAL DISTRICT

The following regulations and requirements apply to PD-PWI Planned Development - Protected Watershed Industrial District.

7.19.1 PD-PWI District: Defined, Intent, Where Permitted

a) PD-PWI districts may hereafter be established in accordance with the general procedures and requirements set forth in Sections 7.4 through 7.9. Such districts are defined as planned development districts for establishment of a range of low intensity industrial uses with minimal impacts beyond the space occupied by the building. It is the intent of these regulations to provide for development of such districts at locations within protected water supply watersheds appropriate in terms of the Land Use Plan and the Orange County Thoroughfare Plan and in accord with the standards set forth herein.

It is further intended that PD-PWI districts shall:

1. Encourage development of appropriate industrial facilities within designated water supply watersheds which will provide employment opportunities for Orange County residents.
2. Provide well planned developments on sites with adequate access to major roads, without serious environmental constraints, with necessary public facilities, and according to plans which will control stormwater runoff and protect water supply water supply watersheds from contamination.
3. Serve as an alternative to continued expansion of non-residential zoning into the agricultural areas of the County.
4. Protect stability and property values of surrounding residential property. It is intended that projects approved for PD-PWI designation will be so located and designed to be compatible with both residential and agricultural uses. It is further intended that projects will provide protection of the water supply by providing methods to control storm-water runoff and keep water quality high.

Minimum Area Required For Establishment of District

No such district shall be established with a net land area of less than ten acres.

Permitted Principal Uses and Structures

Permitted principal uses and structures shall be according to Article 4 for the PD-PWI district. Accessory uses and structures shall be according to those which are shown on the approved site plan for the specific project. In addition, applications for amendment to PD-PWI zoning district may be denied if the proposed project does not contain facilities deemed complementary and compatible or if a particular group of uses, in themselves complementary and compatible, would be inappropriate in the location proposed because of the character of surrounding development and/or zoning.

Floor Area Limitations

Maximum floor area permitted in PD-PWI district shall be as established in Article 5.1.2.

Height Limitations

Maximum height of buildings shall be as established in Article 5 and Subsection 6.2.

Site Planning - External Relationship

1. Access to the PD-PWI shall be directly from a road designated as either a collector or an arterial in the Orange County Road Classification System. The developer must show that the existing facilities are adequate to handle the proposed weight and amount of traffic or has an agreement with NCDOT to upgrade the facility to accommodate expanded needs.
2. Principal vehicular access to the district shall be designed to encourage smooth traffic flow and controlled access to the site. Merging and turning lanes, frontage streets, and/or traffic dividers shall be required where existing or anticipated heavy traffic flows outstrip the ability of the existing facilities to handle the traffic volume.
3. Orientation of the permitted uses, structures and outside storage areas shall be away from adjacent residentially zoned property. Outside storage areas shall be screened from the view of residential areas and from public street rights-of-way.
4. Pedestrian access shall be provided at suitable locations within the district. Such access shall be separated from vehicular access points in order to reduce congestion and hazards.
5. External yards with a minimum width of 50' shall be provided along all exterior and interior property lines in the district. Landscaping and use of such yards shall be as provided below:
 - a) No structures are allowed within the 50' yard area except necessary access drives to the site and one (1) sign identifying the use.
 - b) Landscaping sufficient to provide visual screening of parking areas and outside storage areas shall be provided in the 50' external yard area.
 - c) Existing vegetation may be used and is encouraged in fulfillment of the screening requirement, provided that sufficient visual screening is obtained.
 - d) Where deemed necessary for protection of adjacent property against the adverse impact of noise, lights, or undesirable views, fences, walls or berms of an appropriate character shall be required.
6. Sewage disposal proposed for the district shall be appropriate for the use. If public sanitary sewage facilities are to be used the extension of the lines shall be approved by the State Department of Environmental Management. If on-site sewage disposal is proposed, the system must be approved by the appropriate agency. Community sewage disposal facilities shall be approved by the State Division of Environmental Health.

Internal Relationship

In general, the plan shall provide a unified and well organized arrangement of buildings, service areas, parking and pedestrian and landscaped common areas providing for maximum comfort and convenience of visitors and employees. The plan shall also minimize the area disturbed in site preparation and final paved or impervious surfaces on the site. The preservation of water quality is of extreme importance and the site design shall minimize storm water runoff, encourage sheet drainage and infiltration and provide measures to assure no lessening of water quality.

1. Off-Street Parking and Load Requirements

Off-street parking and loading requirements shall be as established in Article 10.4. Provided, however, that the Planning Board may recommend, and Board of Commissioners require,

lesser amounts of off-street parking areas, clearly justifies such reduction. All parking areas shall be screened from adjacent properties either by existing vegetation or by proposed vegetation.

2. Underground Electrical and Telephone Utilities

All electrical and telephone service lines shall be installed underground in any PD-PWI district at the expense of the developer.

3. Sign Limitation

Sign limitation shall be as provided for PD-PWI districts in Article 9.

4. All access roads and employee/visitor parking areas shall be paved, but graded and located to encourage sheet drainage and infiltration of storm water. Storage areas and equipment parking areas need not be paved, but shall be designed to minimize adverse stormwater runoff impacts.
5. The site plan shall identify the location of and show that all environmentally sensitive areas remain undisturbed. These areas include, but are not limited to, designated flood plains, alluvial soils, impervious soils and land with grades in excess of 15%.
6. The proposed grading, stormwater management, soil erosion and sedimentation control shall be incorporated into the plan and designed to minimize point discharges of storm water and possible soil erosion or sedimentation. If the storage of a large volume of any liquid is proposed the site plan shall indicate adequate storage capacity to retain on-site any spill of such liquids.
7. The applicant shall provide a complete description of the proposed use, including manufacturing processes, materials used, and any wastes produced. The proposed use shall use minimal amounts of water and produce minimal amounts of waste to be disposed of by sewage treatment, solid waste landfilling or other methods.
8. The applicant shall provide a complete description of all hazardous or toxic substances use, produced, stored, consumed or discharged in their manufacturing processes. These substances shall not equal or exceed amounts specified in the most current EPA list of Hazardous Substances and Priority Pollutants.
9. The applicant shall review emergency response capabilities with the appropriate agencies and shall produce an emergency response plan, approved by those agencies. The plan shall be capable of being carried out within the existing system. If it cannot be carried out with existing equipment, the applicant must provide the additional equipment.
10. Outdoor illumination of buildings, outdoor storage areas, and parking areas shall be designed and located to prevent glare on adjacent property. It shall be the applicant's responsibility to show that the proposed lighting can meet this requirement.
11. The applicant shall provide any other information requested by the County to adequately review the Planned Protected Watershed Industrial Development.

All interested citizens are invited to attend this hearing and be heard. Changes may be made in the advertised proposal which reflect debate, objections and discussion at the hearing.

LEAGUE OF WOMEN VOTERS

Statement to Senators and Representatives of N.C. Legislative Study Committee on Haw River and Jordan Lake:

Protection of our drinking WATER supply should be a top priority for all Governmental Units. WATER is a finite resource. It will give out. We must protect WATER for the present and for the future. The League of Women Voters supports planning and management of WATER resources to improve and protect WATER quality. The League of Women Voter Units in the Triangle area have been focusing their attention on Watershed Protection for their counties, as well as Jordan Lake and Falls Lake Watersheds. They ~~have~~ make statements for strict protection at city and county Public Hearings.

Conflicts can arise when industrial, urban or suburban development occurs within areas that are close to WATER supply reservoirs. Sedimentation and erosion from development can and has reduced the storage capacity of reservoirs. Storm runoff from developed areas can introduce pollutants into the drinking WATER supply, making WATER treatment more complicated and expensive. Effluent from nearby wastewater treatment plants can release phosphorus and other pollutants into the WATER supply, making WATER either undrinkable, expensive to treat, or unuseable for recreation purposes. Sewage treatment plants are not presently designed to remove toxics. Certain types of industrial land uses create the risk of chemical spills occurring and contaminating the nearby reservoir or groundwater before the spill can be contained. The land that drains into our impoundments that supply our public drinking WATER should be designated the most protective areas in our STATE, namely WATER QUALITY CRITICAL AREA. We believe government has the responsibility to protect these areas by enacting standards that will prevent pollution.

As we are all aware of the algae bloom problem in our water supplies the League of

Women Voters of North Carolina continue to support:

1. Watershed Management Program for Agriculture.
2. The Phosphate Ban, or Clean Detergent Act.
3. Needed funds for phosphate removal equipment at waste treatment plants.

The League of Women Voters of N.C. recommend funding for:

1. Monitoring underground storage tanks.
2. Evaluating toxics in water supplies using cumulative and additive impact data.
3. Compliance for proper maintenance and operation of sewage plants.
4. Continuation of the Nutrient-sensitive Management Program.
5. Municipalities to improve pollution control on waste treatment plants.
6. Pollution Prevention Pays.

LWVNC STATEMENT To N.C. Legislative Study Committee on Haw River and Jordan Lake

Polls taken of citizens across the country on environmental protection clearly show broadbased and increasing support for Prevention and Clean-up of all Pollution. Citizens expect governmental units to take the steps necessary for the population to have SAFE DRINKING WATER. Citizens must have confidence in their government to take such steps.

Health, jobs and the quality of life are affected in many ways by WATER QUALITY. One realizes that much growth is taking place in North Carolina. We do not have too many areas in our State that can become sources of Drinking WATER, so we need to protect what we have. The State has designated Jordan Lake and Falls Lake as WATER QUALITY CRITICAL AREAS and all the local governmental units need to do likewise. Now is the time for North Carolina to set up stringent standards to protect our WATER Supplies so that our citizens of today as well as future generations will have SAFE WATER to drink.

Thank you.

Margaret Holton
Water Quality Committee
LWVNC
Nov. 14, 1984

UNANIMOUS RECOMMENDATION OF THE
AD HOC COMMITTEE ON THE JORDAN WATERSHED

- I. WATER QUALITY CRITICAL AREA:** That area East and North of a line 2,500 feet from Highway 15-501 and S.R. 1012 to the Orange, Durham and Wake County boundaries and to the limits of the Jordan Lake Watershed.
- Certain additional requirements are imposed in an area within one mile of normal pool level of the Jordan Lake (216').
- Stream buffers and gas tank protection are recommended for the entire Watershed.
- II. PACKAGE SEWAGE TREATMENT PLANTS:** Allowed except for commercial, institutional, office and industrial uses within 1 mile from 216'.
- III. NEW RESIDENTIAL DEVELOPMENT:**
- A. Density:** 1 acre lot minimums
Outside 1 mile from 216' can be reduced to 30,000 square feet with package sewage treatment plant.
- B. Impervious Coverage:** 6% Impervious Coverage on the lot (excludes public or commonly held roads)
- IV. NEW COMMERCIAL, INSTITUTIONAL, OFFICE AND INDUSTRIAL USES:**
- A. Density:** 3 acre lot minimums
2 acres outside 1 mile from 216'
- B. Impervious Coverage:** 20% maximum
- C. Infiltration:** Infiltration of first 1/2" of stormwater run-off on site

D. Sewer Plants: Within 1 mile from 216', no discharging sewer plants

E. Toxics: No hazardous or toxic substances as defined by EPA except: (i) gas, oil, kerosene, diesel fuel (ii) products packaged for consumer use and janitorial products.

F. Standpipes: For underground petroleum tanks, two standpipes, one at the tank and one down-slope recommended for entire watershed.

V. STREAM BUFFERS: Within the entire watershed, a 50' vegetated buffer on both sides of streams indicated by blue line on USGS topo maps. Buffer to be left in natural state (no disturbing soil or root systems or clear cutting).

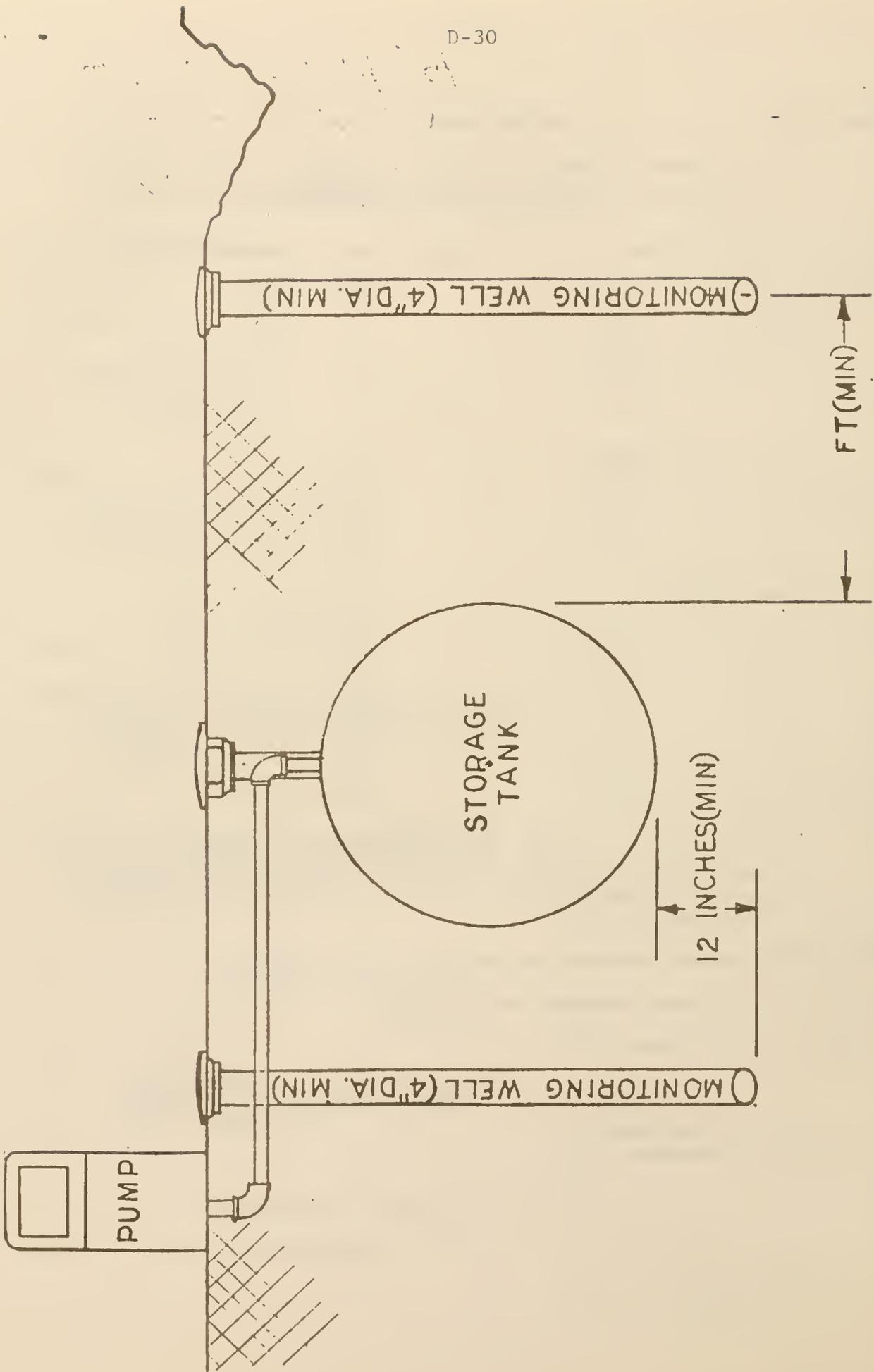
VI. GRANDFATHERING: It was the unanimous recommendation that any already platted lot be exempt from compliance with these recommendations, but that the specific language of such grandfathering clause be drafted by the County Attorney.

VII. RECOMMENDATIONS FOR COUNTY WIDE APPLICATION:

1. Stream Buffers as V. above;

2. Gas Tank Pr

... N. ATION t ... of North ... plants, e ... sheds. ... ng ... tiv



MONITORING WELL LOCATION FOR UNDERGROUND STORAGE TANKS

CITY OF DURHAM
NORTH CAROLINA



CITY COUNCIL

November 12, 1984

RECEIVED

NOV 15 1984

CITY OF DURHAM
CITY COUNCIL

Mr. Daniel Long
Committee Counsel
545 Legislative Office Building
Raleigh, North Carolina 27611

Dear Mr. Long:

I appreciate Representative Joe Hackney's and Senator Russell Walker's invitation to appear and speak before the Haw River and Jordan Reservoir Water Quality Study Committee on November 14, 1984. I regret however that due to a previous commitment in Wilmington, North Carolina I am unable to attend.

Enclosed is a brief history of our progress in Watershed Protection and a copy of the City of Durham's Regulations for Development within Critical Watershed Areas, which was adopted by the Durham City Council on September 5, 1984.

Your willingness to include this material for the record is much appreciated. If I can be of any further assistance, please feel free to contact me.

Sincerely,

Jane Davis
City Council Member

JD/B
Encs.

A YEAR OF PROGRESS IN WATERSHED PROTECTION BY THE CITY OF DURHAM

Presented to the Haw River and Jordan Reservoir
Water Quality Study Committee
November 14, 1984
Jane Davis, Chairman of Public Works Committee

The City of Durham is committed to Watershed Protection. The attached Time Line summarizes the actions taken by the City Council since August, 1983, in support of Watershed Protection. The City Council has adopted a Watershed Protection Policy and Implementation Plan, which will be used as a guide in the development of the necessary changes in City policies and ordinances required to provide for comprehensive watershed protection. As you can see from the attached time line, significant progress has been made in many areas as summarized below:

A. Sedimentation and Erosion Control--The City of Durham, working jointly with Durham County, has developed and adopted a County-wide Sedimentation and Erosion Control Ordinance. This Ordinance which will be administered by Durham County will apply to all land disturbing activities undertaken by any person within the planning jurisdiction of Durham County and the City of Durham except those specifically excluded by the State Sedimentation and Erosion Act. A permit is required by the City/County Ordinance for any land-disturbing activity involving more than 12,000 square feet of disturbed area. The Ordinance also requires improvement security for land-disturbing activities in excess of 5 acres or when the Sedimentation and Erosion Control officer determines that the activity may result in significant off-site damages. The Ordinance, as adopted, has been approved by the North Carolina Sedimentation Control Commission.

B. Industrial Pre-treatment Program--The City of Durham has been a leader in the State of North Carolina in controlling industrial pollutants. The City has had an active industrial waste control program since 1952 and was one of the first cities in North Carolina to develop a BOD (Biological Oxygen Demand) surcharge and is one of the few cities in North Carolina currently providing routine monitoring for radioisotopes in our wastewater discharges. In 1983, the City of Durham made relatively minor modifications to the existing industrial waste control ordinance to bring it into agreement with the Environmental Protection Agency regulations on industrial pre-treatment. The City of Durham now has a fully operational industrial pre-treatment program approved by the North Carolina Department of Natural Resources and Community Development. The monitoring and enforcement of this program is carried out County-wide by the City of Durham.

C. Hazardous Materials--In 1983, the City Council established a special subcommittee on hazardous and toxic materials. This Committee established a Citizens Advisory Committee to develop recommendations for the implementation of regulations to deal with hazardous and toxic materials within the City of Durham. This Committee is composed of very well qualified individuals from Duke University, Duke Medical Center, the Research Triangle Park, chemical industry representatives, and interested citizens. This Committee, along with members of the administration, has developed a draft ordinance on hazardous materials. The draft Ordinance is currently being reviewed by the special sub-committee of the City Council. The Ordinance, as presently drafted, is comprehensive in scope and among other things, includes a provision for the development of a hazardous materials inventory.

D. Point Source Control of Phosphorus--The City of Durham is moving forward with plans for the control of phosphorus discharges from our wastewater treatment plants. The City Council has adopted resolutions in support of a proposed state-wide ban on phosphates in detergents. In addition, the City is currently involved in a cooperative research project with the Department of Environmental Sciences and Engineering in the School of Public Health at the University of North Carolina in Chapel Hill to evaluate the potential use of biological phosphorus removal at our Farrington Road and Northside Wastewater Treatment Plants. This 9-month study will be the first phase of our plan to evaluate phosphorus removal techniques, which will eventually result in recommendations for the design of phosphorus removal facilities.

E. Establishment of a Critical Watershed District--Beginning with a public hearing on July 16, 1984, the City Council, after receiving significant public input, on September 5, 1984, adopted the attached amendment to the Zoning Ordinance, establishing a Critical Watershed Overlay District. As indicated in the Ordinance, the Critical Watershed District was established to protect the quality of present and future water supplies for the City, County, and neighboring localities. Within the range of land uses which can be located within the district, the Ordinance establishes performance standards which apply to the development within the district. The district consists of 2 parts: 1. a Water Quality Critical Area, and 2. a Limited Industrial Area. The Water Quality Critical Area is defined as land which lies adjacent to the shore line of the reservoir at normal pool level and extends within the watershed area of the reservoir to a point beyond either the ridge line of the reservoir watershed or one mile from the shoreline of the reservoir at normal pool level, whichever is the shorter distance. The Limited Industrial Area is defined as all portions of the watershed draining directly to the A-II (water supply) segments of the reservoirs. In addition, for portions of the reservoir watershed not draining directly to the A-II segments of the reservoir, the Limited Industrial Area extends from the Water Quality Critical Area

boundary to a distance of up to 1/2 mile from any publicly held lands acquired for the reservoir.

The following is a summary of the more significant portions of the Ordinance as adopted:

1. A site plan is required for all new development within the district except for minor residential developments of 5 lots or less.
2. Within the Water Quality Critical Area:
 - a) No industries are permitted.
 - b) Offices, commercial, and service establishments only permitted on land parcels of 1 acre or more and are limited to no more than 3,000 square feet of gross floor area.
 - c) The sale of gasoline for motor vehicles is prohibited.
 - d) No land fills or waste disposal facilities of any kind (except for septic tanks) may be located within the Water Quality Critical Area.
 - e) No more than 6% of the land area of a single development may be covered by impervious surfaces. Roof areas of residential buildings may be excluded from the impervious surface calculations if roof run-off is kept from directly or indirectly entering street or parking/driveway drainage systems and is directed to infiltrate across lawn or natural vegetation areas within the confines of the particular development in which the roof is located.
 - f) Curb and gutter is not required for new streets constructed within the Water Quality Critical Area.
 - g) No new public or private wastewater treatment plants or community sewage treatment facilities of any kind are allowed.
 - h) No private sewer lines shall be allowed within the Water Quality Critical Area. No public sewer lines or outfalls shall be allowed unless gravity flow is provided to a point outside the Water Quality Critical Area and the first one inch of storm water run-off from impervious surfaces within the area served by the sewer lines is infiltrated or retained.

3. Within the Limited Industrial Area:

a) No industries which produce hazardous wastes or substances which present immediate hazard to health, safety or the environment are permitted. Only those industries which do not use, store or produce quantities of substances equal to or exceeding the threshold amounts listed in the CERCLA or Michigan List of Hazardous Materials may be located within the Limited Industrial Area without a Use Permit.

b) No facilities which dispose of toxic or hazardous waste may be located within the Limited Industrial Area.

c) For developments not served by public sewers, no more than 12% of the land area of that development may be covered by impervious surfaces.

d) For developments served by public sewers, no more than 30% of the land area of that development may be covered by impervious surfaces.

e) Exceptions to the impervious surface limitations may be granted by the City Council if the site plan reflects special features to safeguard against contamination of storm water leaving the property, including the infiltration, retention or detention of the first 1/2 inch of storm water run-off from impervious surfaces.

f) No new privately owned discharging wastewater treatment facilities are permitted within the Limited Industrial Area and no expansions of existing private discharging wastewater treatment systems are allowed.

g) Pre-treatment facilities for discharge into public wastewater collection and treatment systems are allowed.

h) No private surface discharge facilities are allowed to continue to operate when publicly owned sewer lines are extended to or adjacent to the property served by the private system.

4. The following measures apply to all areas within the Critical Watershed District:

a) Infiltration or retention of the first 1/2-inch of storm water run-off from impervious surfaces.

b) A 50-foot vegetative buffer left in its natural state is to be maintained on both sides of all perennial streams. In addition, a 50-foot vegetative buffer shall be maintained on both sides of the stream bank in areas designated as "flood way" or "flood way fringe".

c) No underground fuel or chemical storage tanks are allowed within either the Water Quality Critical Area or the Limited Industrial Area. Spill containment measures are required for all tanks greater than 250-gallon capacity.

As shown on the attached map, the Ordinance, outlined above which has been adopted by the City Council, currently applies to relatively minor portions of the Limited Industrial Area of Jordan and Falls Lakes. It is evident from the attached map that in order to provide the desired level of protection for the Jordan and Falls Lakes as well as Durham's Lake Michie and Little River water supplies, similar actions are needed by Durham, Orange, Person and Granville counties and we encourage them to do so. We would also like to encourage the State to proceed with efforts to develop modifications to the current stream classification system which will ensure adequate protection of all water supplies in North Carolina in the future.

If there are any questions that I or members of the City staff can answer regarding Durham's Watershed Protection Program, we would be happy to do so at this time.

TIME LINE

PROGRESS IN WATERSHED PROTECTION
CITY OF DURHAM

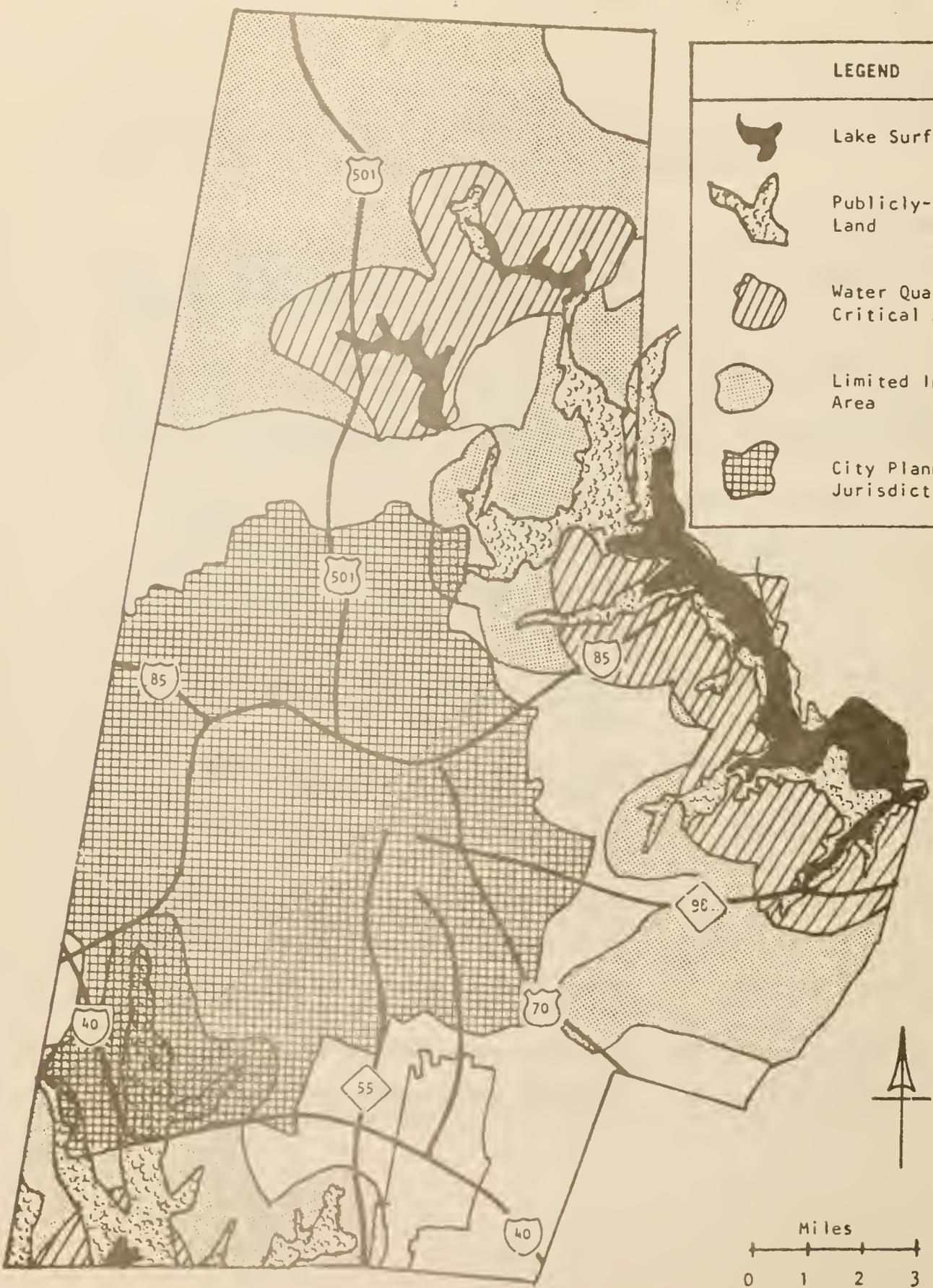
1. August 1, 1983 Resolution concerning strategy for Nutrient Control for B. Everett Jordan and Falls Lakes.
2. August 3, 1983 Durham encouraged support for voluntary local action.
3. September 6, 1983 Sewer Use Ordinance modified to comply with EPA pre-treatment regulations.
4. October 4, 1983 Adopted resolution which established guidelines for implementation of a Hazardous and Toxic Materials Policy.
5. November 21, 1983 Uniform Joint Resolution on the Protection of Jordan and Falls Watershed adopted by City Council.
6. February 20, 1984 Zoning Ordinance amended to provide buffer of 1/4 mile around hazardous wastes facilities.
7. March 19, 1984 Resolution supporting State-wide Phosphorus Detergent Ban.
8. May 7, 1984 Adopted Resolution on Watershed Protection Policy and Plan.
9. May 21, 1984 Approved support for research project at UNC on biological phosphorus removal at Northside and Farrington Road WWTP's.
10. July 16, 1984 Began Public Hearing on Critical Watershed District Ordinance.
11. September 6, 1984 Critical Watershed District adopted.
12. October 1, 1984 Approved enforcement of County-wide Sedimentation and Erosion Program.

MAP OF DURHAM'S "CRITICAL WATERSHED ORDINANCE" AS APPLIED TO THE ENTIRE COUNTY

D-38

LEGEND

-  Lake Surface
-  Publicly-Owned Land
-  Water Quality Critical Area
-  Limited Industry Area
-  City Planning Jurisdiction



8/27/84

• FINAL VERSION ADOPTED BY CITY COUNCIL SEPTEMBER 5, 1984

Section 24-4.D.6 Regulations for Development within Critical Watershed Areas

- A. In order that the City of Durham, Durham County and surrounding areas may continue to have a healthy economic climate, it is essential that adequate supplies of drinking water be assured. Conflicts can arise in meeting this goal when industrial, urban or suburban development occurs within areas that are close to water supply reservoirs. Sedimentation and erosion from development can and has reduced the storage capacity of reservoirs. Storm runoff from developed areas can introduce pollutants into the drinking water supply, making water treatment more complicated and expensive. Effluent from nearby wastewater treatment plants can release phosphorus and other pollutants into the water supply, making water either undrinkable, expensive to treat, or unuseable for recreation purposes. Certain types of industrial land uses create the risk of chemical spills occurring and contaminating the nearby reservoir before the spill can be contained.

The purpose of the Critical Watershed District is to establish measures to protect the quality of the present and future water supply for the City, County and neighboring localities. Because these protective measures allow some latitude with land uses, and because the District is not intended to prescribe a specific land use, but rather a range of acceptable land uses, the Critical Watershed District is designed as an overlay district. Within the range of land uses which can be located within the District, there are established in this section performance standards which apply to development which occurs there.

- B. Establishment of District. The Critical Watershed District may be established for certain lands within the watershed of any public drinking water reservoir which lies within or adjacent to Durham County. The District shall consist of two parts: 1) a Water Quality Critical Area; and 2) a Limited Industrial Area.

A Water Quality Critical Area may be established for land which lies adjacent to the shoreline of the reservoir at normal pool level and extends within the watershed area of the reservoir to a point beyond either the ridge line of the reservoir watershed or one mile from the shorelines of the reservoir at normal pool level, whichever is the shorter distance. The boundaries for the Critical Area shall be set at places readily identifiable on the official Zoning Map, such as streams, roads or property lines. In a case where the one mile distance is the shortest applicable distance, and where there are no nearby identifiable features on the Zoning Map to place the Critical Area boundary, said boundary may be set at the nearest identifiable map feature between one and two miles from the shoreline at normal pool level.

A Limited Industrial Area may be established for the remaining part of the watershed area of the reservoir. For portions of the watershed draining directly to the A II (water supply) segments of the reservoirs, any Limited Industrial Area may extend from the Water Quality Critical Area to the boundaries of that portion of the watershed. For portions of the reservoir watershed not draining directly to the A II segments of the reservoir, the

Limited Industrial Area may extend from the Water Quality Critical Area boundary to a distance of up to 1/2 mile from any publicly held lands acquired for the reservoir. The Limited Industrial Area shall not overlap the Water Quality Critical Area, but shall be placed only in those areas meeting the above criteria which also extend beyond the Water Quality Critical Area. The boundaries for the Limited Industrial Area shall be set at places readily identifiable on the Zoning Map, such as streams, roads or property lines.

- C. Site Plan Requirement. Except for single family detached homes constructed within a "minor" subdivision of less than five parcels, all forms of development within the Critical Watershed District shall be required to have a site plan prepared and approved before any building permits or land disturbing activity takes place. All single family homes exempted from the site plan requirement are still subject to all other requirements of this section and in order to receive a building permit, a scaled drawing shall be submitted which indicates how the applicable requirements will be met. All site plans required under this section shall conform with the site plan provisions of Section 24-12.1, and unless other requirements in the Zoning Ordinance specify otherwise, final approval authority shall be vested in the Subdivision Review Board. All development activities or site work conducted after approval of the site plan shall conform with the specifications of said site plan. Minor amendments to established site plans for development in the district may be amended through action of the Subdivision Review Board. For the purposes of this section, development shall be defined as any new building activity 1) outside any subdivisions of record which are at least partially complete and 2) consistent with the elements described in the definition for Development found in Section 24-1.
- D. Land Use Restrictions. Generally, the underlying zoning district(s) shall control the land uses permitted, within the Critical Watershed District. Besides those limitations, however, there may be several other permitted use limitations which apply. Those further limitations are:
1. Water Quality Critical Area. In addition to the limitations on permitted uses prescribed for the underlying zoning district, the following restrictions shall apply to the Water Quality Critical Area portion of the district.
 - a. Industries. No industries or any other businesses which distribute or warehouse industrial materials may be located within the Water Quality Critical Area.
 - b. Offices. Offices shall only be permitted on land parcels of no less than one acre. Also, no office use on a single parcel of land shall have more than 3,000 square feet of gross floor area. Offices shall meet all other requirements of this section. These restrictions shall not be construed as to prohibit home occupations as defined in Section 24-12.P.

- c. Commercial and Service Establishments. Uses which provide for the sale of motor fuel for motor vehicles are prohibited within the Water Quality Critical Area. Other commercial and service establishments shall only be permitted on land parcels of no less than one acre. Also, no commercial or service establishment on a single parcel of land shall have more than 3,000 square feet of gross floor area. Commercial and office uses shall meet all other requirements of this section. These restrictions shall not be construed as to prohibit home occupations as defined in Section 24-12.P.
 - d. Residential. There are no additional restrictions on the type of residential land use allowed within the Water Quality Critical Area.
 - e. Landfills or Waste Disposal. No landfills or waste disposal facilities of any kind (except for septic tanks) may be located within the Water Quality Critical Area.
2. Limited Industrial Area. In addition to the limitations on permitted uses prescribed in the underlying zoning district, the following restrictions shall apply to the Limited Industrial Area.
- a. Industries. Only those industries which do not use, store or produce quantities or substances equal to or exceeding the threshold amounts listed on the CERCLA or Michigan Lists of hazardous materials may be located within the Limited Industrial Area without a use permit. For industries classified as "Tier III" industries (which excludes industries using hazardous wastes and industries using or producing substances which present an immediate hazard to health, safety or the environment), which use or produce one or more substances on the above lists in at least the threshold amounts, a use permit from the Board of Adjustment shall be required. No Tier I or II industries shall be allowed within the Limited Industrial Area.

In addition to the normal review criteria considered for the use permit, the Board shall consider the Special Requirements for hazardous materials uses found in Section 24-12, KK of the Zoning Ordinance. The Board, in issuing such use permit, may designate conditions it feels are reasonable and appropriate to ensure continued compliance with the requirements for the use permit, as described in Section 24-12.KK.2.

- b. Offices. There are no additional restrictions on the type of office land uses allowed within the Limited Industrial Area.
- c. Commercial and Service Establishments. There are no additional restrictions on the type of commercial and service establishments allowed within the Limited Industrial Area.

- d. Residential. There are no additional restrictions on the type of residential land use allowed within the Limited Industrial Area.
 - e. Toxic or Hazardous Waste Disposal. No facilities which dispose of toxic or hazardous wastes may be located within the Limited Industrial Area.
- E. Impervious Surface Limitations. In order to prevent an excessive amount of stormwater runoff from damaging the water quality of the reservoirs, it is necessary to encourage as much infiltration as possible of runoff from hard surfaces onto land areas which can absorb and filter runoff. For the purposes of this section, an impervious surface is defined as a surface composed of any material that impedes or prevents natural infiltration of water into the soil. Impervious surfaces may include, but are not limited to: roofs, streets, parking areas, tennis courts, driveways, patios, sidewalks, and any concrete, asphalt or compacted gravel surface. Impervious surface calculations for an individual development, shall be cumulative for original construction or any subsequent additions which are made. The following impervious surface limits shall be applied to the Critical Watershed District as specified below.
1. Water Quality Critical Areas. There shall be a limitation of no more than 6% of the land area of that portion of a single development located within the boundaries of the Water Quality Critical Area which may be covered by an impervious surface. Roof areas of residential buildings may be excluded from the impervious surface calculations if roof runoff is kept from directly or indirectly entering street or parking/driveway drainage systems, but rather is directed to infiltrate the first one inch of stormwater across lawn or natural vegetation areas within the confines of the particular development in which the roof is located.
 2. Limited Industrial Areas.
 - a. For a development or portion of a development within the Limited Industrial Area which does not have public sewer service connected to it, there shall be a limitation of no more than 12% of the land area of that development within the Limited Industrial Area which is covered by an impervious surface.
 - b. For a development or portion of a development within the Limited Industrial Area which does have public sewer service connected to it, there shall be a limitation of no more than 30% of the land area of that development within the Limited Industrial Area which is covered by an impervious surface.

- c. Exceptions to the impervious surface limitations specified in a) and b) above may be granted by City Council, upon recommendation from the Subdivision Review Board. Consideration of whether to grant such relief shall be based on a demonstration, to the Council's satisfaction, that the site plan reflects special features to safeguard against contamination of stormwater leaving the property, including the infiltration, retention or detention of the first 1/2 inch of stormwater runoff from impervious surfaces.

F. Special Runoff and Drainage Control Requirements. It is necessary to impose several requirements on development in the Critical Watershed District in order to prevent damage to water quality that is not necessarily attributed to an individual property within a development. These requirements are as specified below.

1. Stormwater Runoff Retention. For development within the Water Quality Critical Area, measures shall be employed to infiltrate or retain the first 1/2 inch of stormwater runoff from impervious surfaces during a storm occurring within a 24-hour period. For development within the Limited Industrial Area, measures shall be employed to infiltrate, retain or detain (detention being least preferred) the first 1/2 inch of stormwater runoff. Methods to accomplish that infiltration, retention or detention shall be shown on the site plan. The area to which this requirement shall apply may be for each individual lot within a single development, or, the development as a whole. If the developer elects to satisfy this requirement for the development as a whole, the site plan shall indicate how any devices or structures used to accomplish the retention or infiltration shall be maintained.
2. Stream Buffer. For all perennial streams indicated by a solid blue line on the USGS topographic maps for land within Critical Watershed District, a 50-foot vegetative buffer left in its natural state shall be maintained on both sides of the stream bank.

For all areas designated as floodway or floodway fringe on the official Zoning Map and located within the Critical Watershed District, a 50 ft. vegetative buffer shall be maintained on both sides of the stream bank.

Street crossings, utility lines, recreational and greenway facilities and recreation related paved surfaces may be allowed as exceptions to the vegetative buffer requirement in perennial stream buffer areas, floodways and floodway fringe areas. Such intrusion shall be minimized or mitigated, to the extent possible.

3. Street Runoff and Drainage. New streets constructed within the Water Quality Critical Area shall not require curb and gutter. New streets which cross perennial streams within the Water Quality Critical Area shall be designed in such a way to avoid direct runoff from pavement surface into the stream it crosses. Such design features shall be indicated on the site plan.

4. Underground Fuel or Chemical Tanks. There shall be no underground fuel or chemical storage tanks allowed within either the Water Quality Critical Area or the Limited Industrial Area. For the purposes this section, underground refers to the burial of such tanks below the surface of the ground or the covering of them by a berm built above grade. Spill containment measures (i.e. dikes, double-lined tanks, etc.) must be taken for any fuel or chemical tank.

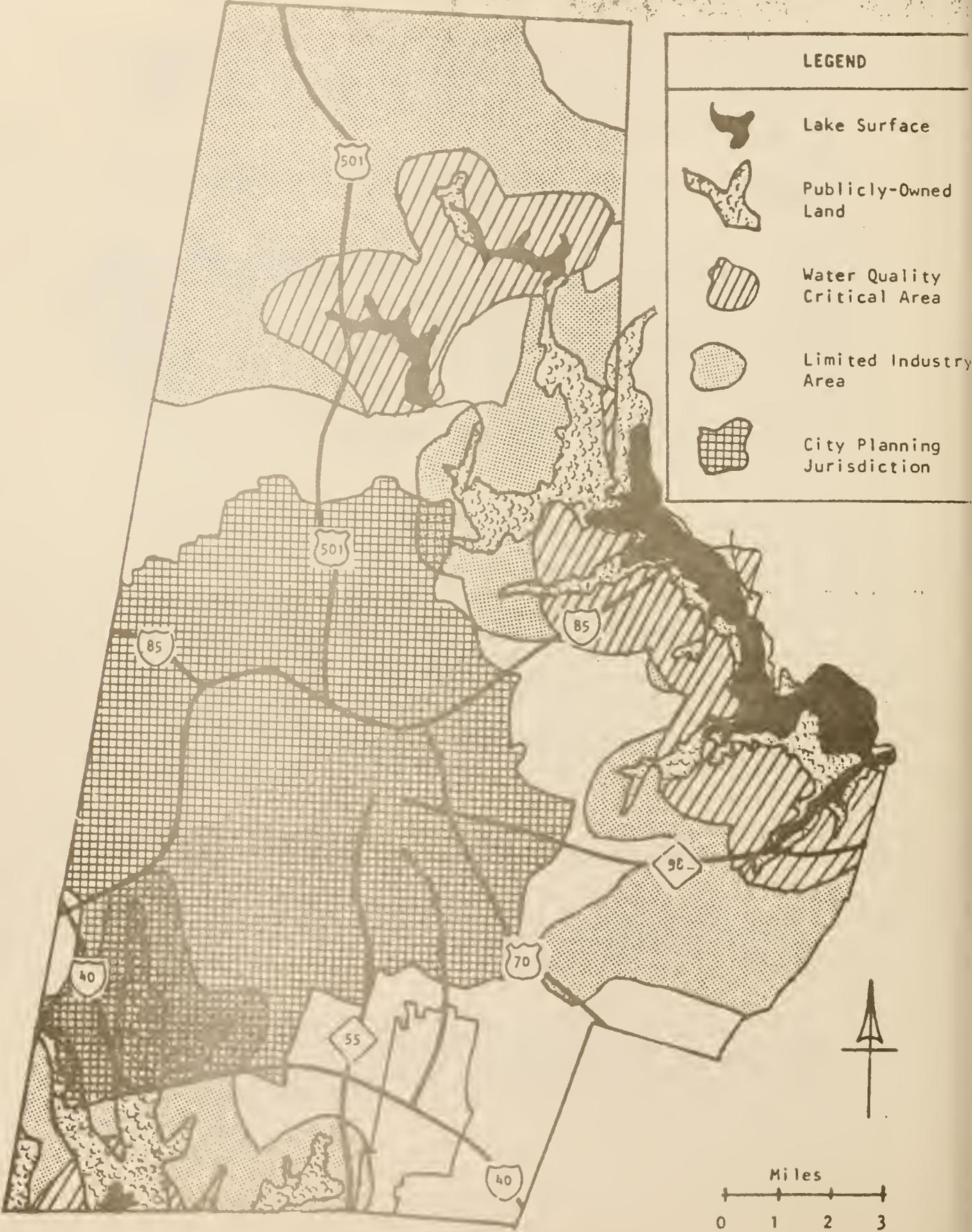
- G. Sewer Service Limitations. Several limitations on sewer service and wastewater treatment facilities are imposed within the Critical Watershed District in order to prevent discharges of untreated or inadequately treated wastewater into the water supply, and to prevent dense urban development patterns from encroaching into the District, creating risks of stormwater runoff contamination. Those limitations and restrictions are described below.
 1. Water Quality Critical Areas. The following sewer facilities restrictions shall apply within the Water Quality Critical Area portion of the District.
 - a. Wastewater Treatment Facilities. No new public or private wastewater treatment plants or community sewage treatment facilities of any kind shall be allowed.
 - b. Sewer Service. No private sewer lines shall be allowed inside the Water Quality Critical Area. No public sewer lines or outfalls shall be allowed unless gravity flow is provided to a point outside the Water Quality Critical Area and the first one inch of stormwater runoff from impervious surfaces within the area served by the sewer lines is infiltrated or retained. Sewer lines shall conform to standards and specifications as set forth by the City Engineer for the Water Quality Critical Area.
 2. Limited Industrial Areas. The following sewer facilities restrictions shall apply within the Limited Industrial Area portion of the Districts.
 - a. Wastewater Treatment Facilities. No privately owned discharging wastewater treatment facilities shall be allowed within the Limited Industrial Area, and no expansions of existing private discharging wastewater treatment facilities shall be allowed.
 - b. Industrial Pretreatment Plants. Pretreatment facilities for use by industrial firms to prepare wastewater for discharge into the public wastewater collection or treatment system shall be allowed within the Limited Industrial Area.

c. Discontinued Use of Private Surface Discharge Facilities.

After a reasonable time to comply is set by the City Council, no person shall continue to operate or use a private surface-discharge sewage treatment system when publicly owned sewer lines are extended to or adjacent to the property served by the private system.

- H. Application of these Regulations to Project Partially Complete. For any development which has received before August 13, 1984, either preliminary plat approval or site plan approval, and which is at least partially complete, any subsequent phases of said development included in the plat or plan which was approved may be completed without being subject to the additional regulations imposed in the Critical Watershed District. Any additions, expansions, or phases which deviate significantly from a site plan or preliminary plat approved before that date shall be subject to the Critical Watershed District regulations. The Subdivision Review Board shall make the determination as to whether any change from a previously approved plat or plan is significant. A development shall be deemed at least partially complete if occupancy permits have been issued for any of the structures contemplated in the approved plat or plan.

MAP OF DURHAM'S "CRITICAL WATERSHED ORDINANCE" AS APPLIED TO THE ENTIRE COUNTY



LEGEND

-  Lake Surface
-  Publicly-Owned Land
-  Water Quality Critical Area
-  Limited Industry Area
-  City Planning Jurisdiction



APPENDIX E

Toxics Program

The Division of Environmental Management's Water Quality Program, in the Short Session of the 1984 General Assembly, received 14 positions to carry out a Toxics Program for the State of North Carolina. Of this group, 13 positions are working to support the Toxics Program, the other position is working at the laboratory to assist in overcoming the heavy analytical workload and to develop a night shift in the interim.

Through the 1985-87 Biennium Budget Request, the Division of Environmental Management has requested 30 additional positions; 10 of which will be dedicated to the laboratory to perform analytical support; 6 of which will be dedicated to supporting the permitting and compliance monitoring activities. The remainder of these positions will be used to support the statewide toxics program through working with the biological toxics, chemical toxics, etc. in intensive investigations and basinwide evaluations as well as other related activities in the areas of permitting and compliance monitoring. The attached material gives a brief description of the anticipated activities to be performed by the present staff and additional staff in carrying out the first phase of the Toxics Program.

In addition to the request for expanded personnel and operating funds, the Division of Environmental Management has requested a Capital Improvement to add some 30,000 square feet to the laboratory. This request, in itself, is not a part of the Toxics budget package, but will be used to support the Toxics Program. As a part of the Capital Improvement request, the Division has requested \$550,000 for the purchase of equipment (gas chromatograph, mass spectrograph, and other equipment) to support the Toxics Program. The present laboratory facility does not have sufficient personnel, space or equipment to support the Toxics Program.

Upon receipt of approval for the expanded personnel, operating budget and the capital improvement request, the Division should be in a position to carry out an adequate Toxics Program.

Statewide Toxics Program

The Statewide Toxics Program has been designed to direct additional resources toward the evaluation and elimination of toxic wastewaters throughout North Carolina. To effectively address toxic contaminants, resources have been increased regarding data collection and evaluation, compliance activities, analytical analyses and the development of appropriate technology to more effectively address this issue.

For several years, most efforts toward controlling toxics have been approached by an individual chemical approach. However, this approach is no longer effective or feasible if not complemented by additional evaluation techniques such as toxicological bioassays. In the first quarter of this year, the Division of Environmental Management has performed over seventy screening toxicological bioassays for acutely toxicity analyses. Eight additional studies have been performed on the potential of dischargers waste to be chronically toxic and two flow through studies have been conducted on whole effluents over extended periods of time. These studies, accompanied by permit reviews, have already yielded in the requirements of 11 dischargers to perform acute bioassay monitoring as part of their permit requirements. Furthermore, forty-six additional dischargers are in the process of being required to perform this type of monthly monitoring. The implementation of this program is further being coordinated through compliance, analytical support and program planning.

Budgets
NSW, Toxics, PPP
FY 84-85

TOXICS:

<u>Appropriated Funds</u>	<u>Budgeted</u>	<u>Expenditures To Date</u>
\$550,272	Salaries & Fringe \$ 350,236	Salaries & Fringe \$ 55,735.00
	Operating 200,036	Operating 49,940.59
	Total \$ 550,272	Total \$105,675.59

NSW:

<u>Appropriated Funds</u>	<u>Budgeted</u>	<u>Expenditures To Date</u>
\$346,534	Salaries & Fringe \$ 186,795	Salaries & Fringe \$ 25,837.00
	Operating 159,739	Operating 40,860.48
	Total \$ 346,534	Total \$ 66,697.48

PPP:

<u>Appropriated Funds</u>	<u>Budgeted</u>	<u>Expenditures To Date</u>
\$116,150	Salaries & Fringe \$ 48,139	Operating \$ 471.93
	Operating 68,011	
	Total \$116,150	Total \$ 471.93

Personnel

1. Nutrient Sensitive Watershed

8 Positions Appropriated

7 Positions Filled

1 Position being interviewed for

2. Statewide Toxics Program

14 Positions Appropriated

11 Positions Filled

1 Position being interviewed for

1 Position being recommended for employment

1 Position not yet established by State Personnel

3. Pollution Prevention Pays Program

2 Positions Appropriated

0 Positions Filled

2 Positions are being established by State Personnel at the present time.

Statewide Strategy For Toxics ControlDiscussion

The manufacture and use of chemicals have increased dramatically since World War II. Total U.S. production of synthetic organic chemicals was less than one billion pounds in 1941. U.S. production of the top 50 organic chemicals was over 170 billion pounds in 1978. The chemical Abstract Services has listed over 5 million chemicals in its data banks. The chemical inventory conducted by the U.S. Environmental Protection Agency lists over 44,000 chemical substances which have been manufactured, imported, or processed for commercial purposes in the U.S. since 1975. This review was conducted under the authority of Section 8 of the Toxic Substance Control Act (P.L. 94-469). This inventory did not include chemical substances such as pesticides, food additives, pharmaceuticals, and cosmetics as they were excluded by regulation.

Chemicals and chemical products have become a vital part of our daily living. They are involved in virtually every aspect of life. Most chemicals, when manufactured or used under the appropriate conditions, present little risk of adverse impacts on human health or the environment. However, many chemicals, if improperly manufactured, used, or handled may cause severe environmental damage.

It is clear that past manufacture, use, handling, discharge, and disposal practices for chemicals have resulted in contamination of the environment. Some impacts, such as contamination of fish, result in loss of value of this natural resource. Other impacts, such as impairment of reproductive ability, have a direct effect on organisms within the ecosystem. Chemicals have long been associated with carcinogenicity, mutagenicity, and teratogenicity in biological organisms, including man. Thus, with such a

large magnitude of potential problems, it is imperative that programs be developed and expanded to address these issues for the protection of the environment and the well being of our citizens.

The impacts of potential toxic compounds can be observed throughout North Carolina. Adequate water supplies are critical from Manteo to Murphy. Recently this area has been highlighted by concerns over Jordan and Falls Lakes. Similar concerns have arisen over other potential water supplies such as the proposed Randleman Lake project. Other concerns are present in all of our developed watersheds of the State. Recent work by the Department on Biocide effects and uses within the State has also raised many unanswered questions concerning just what compounds are in our waters.

Federal and State laws and regulations have been enacted to address toxic pollutants. The 1972 amendments to the Clean Water Act states "It is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." Mechanisms for implementing this policy are provided in Section 301 (technology based effluent limits for NPDES permits); Section 302 (water quality standards); Section 304 (water quality criteria); and Section 307 (toxic effluent standards), of Public Law 92-500.

The North Carolina Administrative Code, Title 15; Chapter 2; Subchapter 2B; Sections .0208 and .0211 address standards for toxic substances and compounds. Section .0208 states: The concentration of toxic substances in the receiving water, shall not exceed one-one hundredth of the 96 hour LC_{50} value. Section .0211 states: Toxic wastes, oils, deleterious substances; colored or other wastes, whether alone or in combination with other

substances or wastes as will not render the waters unsafe or unsuitable as a source of water supply for drinking, culinary, or food processing purposes, injurious to fish and wildlife, or adversely affect or impair the waters for any other best usage.

For several years most efforts toward controlling toxics have been approached by an individual chemical approach to control specific pollutants. Yet, this approach alone presents many problems. Evaluating toxics by individual compounds is dependent on the knowledge of toxicity of the compound, and it is dependent on the knowledge of chemical mixtures of waste products. Other factors which hinder this approach are the requirements to identify and quantify all those compounds that may be in a wastewater source. With the extremely vast number of chemicals in use today, and with approximately 2000 plus new compounds being developed each year, it is mandatory that other innovative approaches be employed to evaluate toxics statewide in North Carolina.

Bioassay and biological techniques are essential to compliment our chemical quantification capabilities. Biological toxicity testing has proven to be a powerful tool in the determination of effluent and discharge toxicity because it directly measures the response of living organisms to pollutants. These techniques have an advantage over the chemical approach which may not identify all toxic pollutants in a wastewater, and the chemical approach cannot assess synergistic effects.

The control of toxic substances is essential for the protection of public health of the citizens of North Carolina and for the assurance of the availability of safe drinking water supplies for continued economic growth of the State. Protection of our natural resources is mandatory, and

can only be accomplished by adequate support for our existing programs.

The current staffing and support funds now available are totally insufficient to provide the necessary levels of activities required to efficiently and effectively address toxics in North Carolina. Whereas the basic organizational structures exist for the implementation of these programs; it is restrained in its effectiveness by insufficient staffing and operational support funds.

Strategy of Toxics Evaluation

An effective and responsive toxics program in North Carolina can be structured and implemented within the existing framework of our organization. The overall strategy approaches will be multi-faceted and will address several levels of comprehensive evaluations. The implementation will be coordinated through five major components: monitoring; permitting; compliance; analytical support and program planning. Each of these major components will have multiple responsibilities, capabilities, and expertise necessary to comprehensively address toxic compounds in the environment.

Monitoring: Ambient monitoring activities will be a key component in the strategy to address toxics. The program will be directed toward the collection and evaluation of data from selected critical sites statewide to enable a comprehensive evaluation of trends, current compound levels, and priority water bodies. Identified critical areas will require additional intensive evaluations to locate sources of contaminants which may be entering the aquatic environment. Various levels of the food chain as well as the water medium will be evaluated for bioaccumulation, as well as comprehensive evaluation of other compounds present. The information will center around fish tissue, macroinvertebrate accumulation, sediment accumulation, and water quality levels for a wide variety of chemical substances including heavy metals, synthetic organic chemicals, and selected pesticides.

Bioassay: Bioassay evaluations will be the most important tool for an effective evaluation of toxic compounds and mixtures of substances that are entering the State's waters. Bioassay evaluations are very important.

as they evaluate whole waste and can detect toxicity due to individual compounds, several compounds, as well as evaluate synergistic properties of a waste. The program will consist of a screening program for the identification of potential sources that require additional evaluations, acute and chronic procedures for the evaluation of short term and long term effects, and will include resources for toxic criteria and guideline development in North Carolina. These capabilities will enable evaluations of point source, non-point source, as well as individual compound evaluations as they relate to impact to the aquatic environment and public health. The current bioassay program has been in existence about one year. At this time approximately 70 facilities have been screened for potential toxicity problems. Approximately 45% have not indicated problems and 55% will require additional evaluations. Currently, requests have been received for an additional 55 sites that require evaluation. In manpower, this relates to a backlog of over three years to accomplish with existing resources, and the demand for additional evaluations are increasing daily.

Biological Monitoring: The symptoms of toxic impacts usually result in changes in the components of the aquatic environment. The sole use of a chemical by chemical approach in evaluating problems is not only indirect, but normally inadequate for a comprehensive evaluation. There are numerous reasons that biological parameters must be employed in support of chemical information. Chemical studies alone do not integrate possible fluctuations in water quality between sampling periods; therefore, short term critical events may be missed. The biota, including macroinvertebrates, plankton, and fish, however, reflect both long-term and short-term water quality conditions. These various species of aquatic life are excellent water quality indicators as they are found in all aquatic habitats, are less

mobile than many organisms, and are easily collected. The aquatic biota integrate and monitor the effects of a wide array of potential pollutants and include both synergistic or antagonistic effects. The use of biological monitoring techniques enable analysts to determine critical areas for more intense investigations, evaluate water quality trends, determine lengths of impacted water bodies and also provide a general tool to effectively integrate biological and chemical information.

Intensive Surveys: Intensive survey capabilities are an integral part of all programs which require specialized data collection and evaluation. The intensive survey program enables special studies to be accomplished to integrate necessary physical, chemical, and biological data to support regulatory actions, enforcement, permit limitations, and data assessment. The intensive survey program enables efficient and prompt responses to critical situations both short and long term to allow necessary information for final assessments and actions. This area of expertise will work closely with the other disciplines concerning specific compound identification, quantification, and data evaluation.

Data Support: With the generation of vast amounts of data and information including chemical, biological, and toxicological, it is necessary to develop strategies of coordinating and disseminating that information in a timely, orderly, and accurate manner to assist in proper data evaluation. There are numerous computer data banks with hundreds of thousands of pieces of information that are extremely valuable for precise, accurate, and timely responses and evaluations. The expansion of our data handling capabilities will be essential for the operation of an efficient, effective, and responsive toxics program.

Permitting: One of the products of an effective toxics program will be a more comprehensive review of NPDES permit limits for facilities. Many evaluations will result in additional toxics considerations as wasteload allocations and permits are prepared. It is essential that staff be available to incorporate biological, chemical, and toxicological requirements and restrictions in permits to dischargers. Another responsibility of this program will be the interaction between government agencies and industries to develop the idea of Pollution Prevention Pays.

Compliance and Facility Oversight: Currently, the Water Quality Program permits over 2700 individual facilities to discharge to the State's waters. Ensurance of permit compliance and facility review and evaluation is a key component of an effective toxics strategy. As toxicity limits and additional chemical limits are included in the permitting process, it will be essential that we increase our capabilities to monitor and assess discharge facilities to ensure adherence to permit restrictions. We should provide technical training and expertise to wastewater treatment plant operators, and also evaluate treatment plant operations and designs to ensure adequate waste treatment necessary to protect the State's waters. At current staffing levels only approximately 20% of the 2700 plus facilities are inspected yearly. At this rate some facilities may not be inspected but every 3-5 years. Based on the total personnel available, each staff member assessing facility compliance would be responsible for over 100 facilities each, with more facilities being permitted monthly. Thus, the necessity for increased emphasis on this program is mandatory.

Analytical Laboratory Support: An effective statewide toxics program will necessitate adequate analytical support for all phases of the evaluation program. Precise and quality assured data will be of extreme importance

for a successful program. Current staffing is insufficient even for the level of present operations. Backlogs of samples for analysis constantly exceed 1-2 years of work. Evaluations are curtailed; follow-up investigations are limited because of the lack of adequate analytical staffing, equipment, support funds, and space restrictions. With increased assessment of toxic compounds, it will be necessary to develop more sophisticated methodology to enable organic and metal compound analyses at much lower detection limits. Sampling techniques and analytical procedures also require additional evaluation. Impacts are caused by chemicals at the part per trillion range, yet we now struggle with existing manpower and equipment to calculate levels at part per billion or part per million. Such capabilities are paramount to control, regulate, permit, and evaluate toxic compounds.

Program Planning: Initial toxicity studies are highly technical and site specific. As numerous studies are completed, and as expanded capabilities are developed, it is extremely important to increase the capability to implement sound management programs to deal with toxicity issues. Reclassifications and water quality assessments will require factoring in the relevant toxicity information. Close coordination with other state, local, and federal agencies will be necessary to increase efficiency and facilitate good communications. New policies, program directions and regulatory authorities will also require development.

APPENDIX F

INTRODUCED BY:

Referred to:

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

A BILL TO BE ENTITLED
AN ACT TO PROVIDE REGULATORY FLEXIBILITY IN THE SETTING OF
WATER QUALITY STANDARDS AND MANAGEMENT PRACTICES.
The General Assembly of North Carolina enacts:
Section 1. Chapter 143 of the General Statutes is
amended by repealing subsection (c) of G.S. 143-215.
Sec. 2. This act is effective upon ratification.

APPENDIX G

REGIONAL WATER RESOURCE PROGRAMS

The Triangle J Council of Governments (TJCOG) serves six county and thirty municipal governments in the Raleigh-Durham-Chapel Hill area. TJCOG's membership includes Orange, Durham, and Chatham Counties in the Jordan Lake watershed. For the past 10 years, Triangle J has operated a Regional Water Resources Program which consistently ranks as the top priority of its elected membership. This program has enabled local governments in the Triangle area to address practical and policy-level issues of water quality and supply protection in an open, coordinated manner which is essential for inter-local cooperation. Through this approach, Triangle J was primarily responsible for formulating a strategy and guidelines for protecting the Falls and Jordan Lakes water quality from excessive suburban and industrial development. TJCOG's Water Resources Program is generally recognized as the most effective inter-governmental effort of its type in North Carolina, and one of the best in the southeast.

The Triangle J program was originally funded under EPA's areawide Water Quality Management Program. With the phasing out of EPA's "208 Program" in 1981, Triangle J experienced a 70 percent loss of external funding for its water resource activities. Since 1981, TJCOG has relied on an annually decreasing share of federal 205(j) support passed through the North Carolina Department of Natural Resources and Community Development. Although the State will continue to receive this limited amount of federal money through FY '85, NRCD will make no further commitments to allocate any of it to Triangle J.

The local governments who comprise TJCOG consider the Water Resources Program to be one of the agency's top priority activities. They have expressed this support--in the face of dwindling outside funding--by increasing their local contributions to the Water Resources Program from \$6,000 in 1978 to over \$50,000 in the current Water Resources Program budget. It is unlikely that enough additional local money can be generated to offset the impending loss of federal pass-through funds. To maintain Triangle J's Water Resources Program at its present activity level will require at least an additional \$50,000 a year. The attached outline summarizes the scope of a fully-staffed Triangle J program.

Piedmont Triad Council of Governments also needs funds with which to begin a water resources program similar to the one that has been so effective at Triangle J. Officials there estimate Piedmont Triad needs from \$45,000 to \$50,000 to start up such a program.

Water Supply Protection: Existing and Future Sources

- Local Ordinances & Regulations - Watershed/Basin-wide Uniformity
- Tradeoffs Among Water Quality Control Methods - Point Source Vs. Nonpoint Pollution; Source Control Vs. End-of-Pipe Treatment
- Policies & Procedures of State Water Resource Agencies - Existing Programs, Regulations, and Practices; e.g., Monitoring and Enforcement, Permitting, Water Quality Classifications and Standards; Policies for Water Supply Allocation, Interbasin Transfer, Etc.
- (Other Water Supply Protection Issues)

Water Supply Development

- Identify & Preserve Best Available Surface and Groundwater Sources
- Promote Economies of Scale for Joint Ventures Among Local Jurisdictions - Water Supply Sources and Treatment/Distribution Systems
- Recommend Best Legal/Institutional Arrangements for Inter-Local Collaboration
- Recommend Capital Improvement Programming Needed for Such Joint Ventures
- (Other Water Supply Development Issues)

Local Assistance

- Local Ordinances, Regulations
- Site Plan Review for New Developments
- Capital Improvement Programming/Budgeting/Financing
- Water Conservation, Drought Management Strategies
- Operation & Maintenance Training/Assistance for Small Town Utilities
- (Other Technical and Administrative Services Requested by Local Governments)

APPENDIX H

SESSION 19 85

INTRODUCED BY:

Referred to:

1

2

A BILL TO BE ENTITLED

3

AN ACT TO PROVIDE FOR THE SALE OF CLEAN DETERGENTS IN NORTH

4

CAROLINA.

5 The General Assembly of North Carolina enacts:

6

Section 1. Article 44 of Chapter 14 of the

7

General Statutes is amended by adding a new section to read:

8

"14-346.3. Sale of cleaning agents containing phospho-

9

rus.--(a) No person shall sell any cleaning agent which

10

contains more than five-tenths percent (0.5%) phosphorus by

11

weight, other than a cleaning agent for machine dishwashing

12

or cleansing of medical and surgical equipment.

13

(b) No person shall sell any cleaning agent for

14

machine dishwashing or cleansing of medical and surgical

15

equipment that contains more than eight and seven-tenths

16

percent (8.7%) phosphorus by weight.

17

(c) No person shall sell any chemical water condition-

18

er that contains more than twenty percent (20%) phosphorus

19

by weight.

20

(d) For purposes of this section:

21

(1) 'cleaning agent' means any laundry detergent,

22

laundry additive or dishwashing compound.

23

(2) 'chemical water conditioner' means a water

24

softening chemical or other substance

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

containing phosphorus and intended to treat
water for machine laundry use.

(e) Cleaning agents used for industrial processes and
cleaning, or for cleansing dairy equipment, or for other
agricultural uses are not subject to this section.

(f) Any person who violates any provision of this
section shall be guilty of a misdemeanor punishable by a
fine not exceeding five hundred dollars (\$500.00)."

Sec. 2. This act shall become effective January
1, 1986.

North Carolina
Agricultural Cost Share Program
For
Nutrient Sensitive Waters

Purpose: To reduce the input of agricultural nonpoint source pollution (sediment, nutrients, animal wastes and pesticides) into the Falls and Jordan Lakes and Chowan River.

To assist farmers in making their production operations more efficient by increasing the level of on-farm management.

Eligible
Areas:

The Falls, Jordan and Chowan River Watershed portions of the following counties - Rockingham, Caswell, Person, Granville, Guilford, Alamance, Orange, Durham, Chatham, Wake, Northampton, Hertford, Gates, Bertie and Chowan.

Cost Shared
Practices:

Conservation tillage, diversions, filter strips, field borders, critical area planting, sediment control structures, sod-based rotations, grassed waterway, strip-cropping, terrace, cropland conversion to grass or trees, grade control structures, water control structures and animal waste management systems.

Cost Share
Rate:

75% of the average cost for each practice (farmer provides 25% which can include in-kind support).

Up to a maximum of \$15,000 per year to each applicant.

Cost Share
Agreement:

Both annual and long term agreements (3 years) will be available.

Applicants who receive cost sharing will be required to maintain and continue the practices for a specified minimum life and agree to perform certain fertilizer and/or waste management practices.

Application:

Applications for cost sharing will be accepted as of September 4, 1984.

Where:

The _____ Soil and Water
Conservation District Office.

Telephone () _____

AGRICULTURAL COST SHARE PROGRAM FOR NUTRIENT SENSITIVE WATERS

PURPOSE: To reduce the input of agricultural nonpoint source pollution (sediment, nutrients, animal wastes and pesticides) into the Falls and Jordan Lakes and Chowan River.

To assist farmers in making their production operations more efficient by increasing the level of on-farm management.

AREAS: The Falls, Jordan and Chowan River Watershed portions of the following counties -- Rockingham, Caswell, Person, Granville, Guilford, Alamance, Orange, Durham, Chatham, Wake, Northampton, Hertford, Gates, Bertie and Chowan.

COST SHARED PRACTICES: Conservation tillage, diversions, filter strips, field borders, critical area planting, sediment control structures, sod-based rotations, grassed waterways, stripcropping, terraces, cropland conversion to grass or trees, grade control structures, water control structures and animal waste management systems.

COST SHARE RATE: 75% of the average cost for each practice (farmer provides 25% which can include in-kind support).

Cost share incentive payments will be provided for conservation tillage and land application of animal wastes.

Up to a maximum of \$15,000 per year to each applicant.

COST SHARE AGREEMENT: Both annual and long term agreements (3 years) will be available.

Applicants who receive cost sharing will be required to maintain and continue the practices for a specified minimum life and agree to perform certain fertilizer and/or waste management practices.

APPLICATION: Applications for cost sharing are now being accepted at your local Soil and Water Conservation District office.

This information was provided by the Department of Natural Resources and Community Development, Division of Soil and Water Conservation.

5,000 copies of this public document were printed at a cost of \$50.00 or \$.01 per copy.
September 1984

1985-861986-87

8. Nutrient Sensitive Waters Program:
 This program is for evaluating the waters of the State with respect to identifying those that are nutrient sensitive and those where eutrophication trends are occurring. Adequate data collection and interpretation, as well as effective compliance monitoring, are vital to identifying and correcting those situations where eutrophication or excessive nutrient inputs are an existing or imminent problem.

315,804
(8)293,172
(11)

- - - - -

APPENDIX I
STATEMENT ON FINANCING OF
WATER AND WASTEWATER FACILITIES IN
NORTH CAROLINA

STATE GOALS AND POLICY BOARD

Issue Paper

Prepared by Sheron Keiser Morgan, Ph.D.

Issue: Financing Water and Waste Water Treatment Facilities

Background: Local Governments in North Carolina are faced with the need to make substantially larger investments in water and waste water treatment facilities than they previously had anticipated. EPA has reduced its share of eligible costs from 75 percent to 55 percent and has restricted the definition of eligible costs to "current needs." Since most projects include additional capacity for anticipated growth, the effective rate of EPA match declines to about 42 percent of total project cost.

Funds from the 1977 Clean Water Bond Program were exhausted earlier this year. Revenues from the 1/2 cent sales tax which are dedicated over the next 10 years to water and waste water treatment facilities are sufficient to cover only 9 percent of the waste water treatment needs identified on the 1982 EPA Needs Survey.

Indications are that the Legislature will move to consider some form of assistance to local governments in financing water and waste water investments. In the absence of alternatives, the most likely proposal to emerge will be designed along the lines of earlier Clean Water Bond programs. Such a program would tend to perpetuate the current expectation among local officials that a sizeable portion of needed investments in water and waste water treatment might continue to come from outside.

This paper is being prepared under the aegis of the State Goals and Policy Board to encourage consideration of a wide range of financing options, with careful consideration being directed to the long-term policy implications of each option.

This draft was reviewed and modified by the Water Resources Committee of the State Goals and Policy Board, chaired by Kenneth Dews. The Committee then met with the Legislature's Water Pollution Study Committee, chaired by Senator Russell Walker and Representative Charles Evans. Senator Walker invited staff to present the same information to the Falls/Jordan Study Committee which, after review of the paper moved to include its contents in the committee's proceedings, along with a recommendation that the Legislature aggressively seek a solution to the problem of

FINANCING WATER AND WASTE WATER FACILITIES IN NORTH CAROLINA

This paper is being prepared under the auspices of the Water Resources Subcommittee of the State Goals and Policy Board. It is expected to go through several additional drafts, reflecting the further input of local government officials, legislators, representatives of environmental groups, academics, private citizens and the leadership of the in-coming administration. A final draft of the paper will be available by early March, 1985.

The purpose here is to outline briefly the issues confronting state and local governments in the face of cut-backs in federal financing of water and waste water facilities, to suggest some possible policy objectives which might be pursued if the state undertakes a new program to provide assistance, and finally, to identify a range of options which might be considered and to provide an analysis of the advantages and disadvantages and the costs of each option.

Financing Issues in the Face of Federal Cut-backs

Federal funding for waste water treatment has declined from a high of \$110 million in 1976 to only \$42 million in 1984. Of even greater importance to individual projects, the federal share declined as of October 1, 1984, from 75 percent to 55 percent; moreover, the costs eligible for federal match are now limited to current need, even though plants are generally built to meet anticipated twenty-year need. This means that the effective rate of federal match is somewhere between 35 percent and 45 percent. Funds available under the state Clean Water Bond program were exhausted this year, leaving local governments to bear the full cost of the non-federal share.

Questions raised by these cut-backs in federal funding include:

What is the capacity of local governments to finance water and waste water treatment facilities in the absence of outside assistance?

What is the appropriate role for state government? In facilitating financing? In covering some portion of the total project cost? In providing leadership in planning and management?

Should the state assume more responsibility for financing waste water treatment facilities than for the development and treatment of water supply?

FINANCING WATER AND WASTE WATER FACILITIES IN NORTH CAROLINA

This paper is being prepared under the auspices of the Water Resources Subcommittee of the State Goals and Policy Board. It is expected to go through several additional drafts, reflecting the further input of local government officials, legislators, representatives of environmental groups, academics, private citizens and the leadership of the in-coming administration. A final draft of the paper will be available by early March, 1985.

The purpose here is to outline briefly the issues confronting state and local governments in the face of cut-backs in federal financing of water and waste water facilities, to suggest some possible policy objectives which might be pursued if the state undertakes a new program to provide assistance, and finally, to identify a range of options which might be considered and to provide an analysis of the advantages and disadvantages and the costs of each option.

Financing Issues in the Face of Federal Cut-backs

Federal funding for waste water treatment has declined from a high of \$110 million in 1976 to only \$42 million in 1984. Of even greater importance to individual projects, the federal share declined as of October 1, 1984, from 75 percent to 55 percent; moreover, the costs eligible for federal match are now limited to current need, even though plants are generally built to meet anticipated twenty-year need. This means that the effective rate of federal match is somewhere between 35 percent and 45 percent. Funds available under the state Clean Water Bond program were exhausted this year, leaving local governments to bear the full cost of the non-federal share.

Questions raised by these cut-backs in federal funding include:

What is the capacity of local governments to finance water and waste water treatment facilities in the absence of outside assistance?

What is the appropriate role for state government? In facilitating financing? In covering some portion of the total project cost? In providing leadership in planning and management?

Should the state assume more responsibility for financing waste water treatment facilities than for the development and treatment of water supply?

How do the answers to these questions affect the changing nature of the state/local partnership in supporting growth and protecting the environment?

Possible answers to these questions will be explored in the following sections.

Changing Roles, Changing Expectations: State and Local Governments

Prior to the federal Clean Water Acts and the matching funds available through the Environmental Protection Agency, the construction and operation of water and waste water treatment facilities was solely a local government responsibility. Federal intervention brought higher standards which required larger investments than might otherwise have been made by local governments left to their own discretion. As an incentive to conform to these higher standards, the federal government offered to match local expenditures at a ratio of 75 percent federal/25 percent local. At the same time, the State of North Carolina offered to contribute one half of the local share. As a result, local governments have come to expect that the largest share (as high as 87 and 1/2 percent of the total investment) might be financed from outside. Now suddenly, the federal share is declining below 50 percent and no state matching grants are available. Local governments which did not receive EPA 201 funding before October 1, 1984 are faced with substantially larger local investments than they had anticipated.

A similar pattern has emerged in the financing of water supply. A major difference, however, was the fact that the purpose of federal and state participation was to promote economic development and, in emergency situations, to protect public health. Recent declines in federal funds for water supply--from the Farmers Home Administration, HUD and EDA--have paralleled the cut-backs in EPA waste water treatment funds. In the case of the Farmers Home Administration, which is the most important source of funds for smaller communities, the problem is aggravated by the fact that a declining number of small communities in North Carolina are eligible due to rising per capita incomes. On the other hand, these local governments are in a better position to finance the projects themselves.

In 1981, the General Assembly authorized a referendum on a third Clean Water Bond program. Recession in the national economy accompanied by high interest rates discouraged the governor from calling for the referendum in 1981 and 1982. In 1983, the General Assembly rescinded the authorization for the Clean Water Bond referendum and adopted, instead, an additional 1/2-cent local option sales tax and stipulated that 40 percent of the municipal receipts be allocated to water and waste water treatment facilities for the first five years and 30 percent for the next five years.

The estimated revenues from 40 percent of the 1/2-cent sales tax to be allocated to water and waste water treatment total \$164.5 million over a ten-year period or only 9.7 percent of the \$1.7 billion

in waste water treatment needs identified on the 1982 EPA Needs Survey. Even if receipts from the 1/2-cent sales tax are adequate to meet water and sewer needs, the fact that the tax revenues are spread across all communities regardless of need means that the revenues available are frequently inadequate to finance particular projects.

Note: data and analysis to complete the following two paragraphs will be available in late December.

Column ** in the attached Table shows the percent of the needed investment in each waste water treatment facility which could be financed by receipts from the 1/2-cent sales tax in a given year. (Close this paragraph with a discussion of limited usefulness of the 1/2-cent sales tax as a source of up-front construction costs, but fact that it may be an important source of revenue for debt service.)

(Insert paragraph discussing local capacity to finance water and waste water treatment with general obligation bonds, et. al. data to demonstrate need for state assistance.)

Declining federal support, when coupled with forecasts of continued growth in population and employment and a commitment to maintaining high water quality standards, suggests the need for a major new state initiative which clearly delineates both state and local responsibilities in providing water supply and meeting water quality standards and which generates adequate revenues to meet both current and long-term needs.

Possible Objectives for State Policy Over the Next Five Years

This discussion of policy objectives assumes that EPA's allocation to North Carolina will be \$42 million per year over the next five years and that the matching rate will be 55 percent of current need, or an effective rate of 42.6 percent of the total cost of construction including excess capacity for anticipated growth. (This estimate of the effective rate is based on an average of the projects now on the Priority List for 1985. The total cost of these projects is \$32.5 million, of which EPA will provide \$13.8 million.)

Outlined below are seven policy objectives which deserve serious consideration in framing legislation to provide state assistance to local governments in meeting their water and waste water treatment needs. These policy objectives will be used as a basis for comparing and evaluating the financing options presented in the following section.

As an over-riding consideration, it is important to note at the outset that whatever particular form a program of state assistance may take, it ought to be framed with careful consideration for the precedents it may be setting and the expectations it may be creating on the part of local governments. A conscious decision ought to be made allocating responsibility between state and local governments and assuring that the necessary revenues are available to cover

anticipated expenditures over the long-term.

A state program of assistance to local governments in financing water and waste water treatment facilities ought to address both the need to maintain and improve water quality and water supply and the need to support the growth of population and jobs. In order to do so, a program might be designed to realize one or more of the following specific objectives:

1. **To assist local governments in financing the construction of waste water treatment facilities to meet the current backlog of needs.**

Discussion: Projects on the EPA Priority List represent the current back-log of unmet needs for waste water treatment facilities. The "current backlog of needs" include all those projects required to meet EPA water quality standards given existing levels of effluent. A substantial number of these communities are under moratorium (i.e., no additional discharge from any source,) and many are violating water quality standards.

The total non-federal share for all projects on the EPA Priority List and all communities under moratorium amounts to \$258 million. These projects account for 27 percent of the \$1.7 billion on the EPA Needs Survey.

2. **To assist local governments in financing an additional 6 percent of long-term (20-yr) waste water treatment needs, over and above the EPA priority list.**

Discussion: In order to avoid giving "entitlement" status to projects on the current EPA Priority List, it would be desirable to provide funds for a limited number of projects which are not currently on the Priority List.

In the absence of additional EPA funds, a grant program might need to cover up to 50 percent of the total cost of construction and a loan program might need to cover up to 100 percent of the cost of construction. These grants or loans might be allocated on the basis of economic development potential or the threat posed to water quality.

3. **To provide \$100 million in assistance to local governments in meeting their long-term water supply needs.**

Discussion: Water supply has traditionally been a

function of local governments. The role of state government has been to provide assistance in cases 1) where there is a clear threat to public health and the local government lacks the resources to respond in a timely manner, or 2) where expansion of the local economy is directly dependent on the availability of publicly supplied water and the local government lacks the resources to respond in a timely manner.

Respecting this traditional division of responsibility between state and local government, these funds might be allocated to projects on the basis of public health considerations or economic development potential.

4. **To anticipate and prepare for the eventual elimination of EPA funding for waste water treatment--now estimated to occur in 1992.**

Discussion: EPA Assistant Administrator for Water Jack E. Raven was quoted recently as saying that the federal role in financing waste treatment plant construction is generally expected to hold steady at current levels until 1992, at which point funding will begin declining to zero by 1996. Citing an EPA task force report due out later this fall, he listed three major options for financing through 1991: "continuing the current construction grants program; federal grants to states for establishing self-sufficient financing banks or loan programs; and public-private partnerships." The report will recommend that states be allowed to choose from among these options. This option is also favored by the U.S. Treasury as a way of reducing the federal deficit over the long term.[1]

5. **To bring user fees for water and sewer services up to levels which reflect the full cost of producing these services, thus moving local governments toward a solid foundation for long-term financing of water and waste water treatment needs.**

Discussion: A recent survey by the Water Resources Research Institute indicates that customers paid an average of \$1.04 per 1000 gallons for water service and \$0.87 per 1000 gallons of waste treated.[2]

Revenues from customers covered only 76 percent of expenditures by local governments, the major portion of the balance being derived from federal and state construction grants for waste treatment

plants. This data clearly indicates that current rates do not include provision for replacement costs. Moreover, 20 percent of the cities in the survey had revenues less than operating costs.[3]

In addition to raising rates, differential pricing of services, providing lower rates to industrial and commercial customers, may need to be discontinued. A recent article in the Harvard Business Review suggests that industrial use can be reduced dramatically at relatively small cost to producers, but that these modification rarely occur unless prompted by increases in user fees.[4]

6. To encourage planning by local governments for water supply and for operations and maintenance, capital replacement and financing of water and waste water treatment facilities.

Discussion: Improved planning and management could reduce costs by carefully phasing capital investments and by making greater use of existing facilities through management of demands (eg., giving large industrial users a lower rate in exchange for their dumping of waste in off-peak hours.)

7. To encourage the optimum level of operations and maintenance of water and waste water treatment facilities.

Discussion: In many cases the capacity of existing plants can be increased and the quality of effluent stabilized at a higher level. To do this, it is essential that operating personnel be well trained. This can be achieved by expanding the state-mandated training and certification requirements to include water distribution and waste water collection system operators and all waste water treatment plant operators. Currently, only the operators of large plants are required to be certified. The level of certification should be related to the size and complexity of the system operated.

Options for a New Program of State Assistance

Six options for state assistance are presented in the discussion below. The level of program activity is held constant across all six options to permit easy comparison, especially with reference to cost. The range of options includes 1) a grant program modeled along the lines of earlier Clean Water Bond programs using either

bonds or direct appropriations as a source of funds, 2) a bond/loan program with the state subsidizing a portion of the interest, 3) a subsidized interest program, 4) a revolving loan fund, 5) a dedicated sales tax, and 6) a tax on water and sewer services.[5]

1. Clean Water Bond/ Grant Program: state appropriates or borrows funds in bond market and makes grants to local governments to provide up to one half of non-federal share (or a maximum of 30 percent of the total cost of the project where federal funds are available, or a maximum of 50 percent where no federal funds are available.)

Advantages: program is familiar, widely accepted by local governments.

Helps to close the gap created by the decline in federal funds.

Disadvantages: leaves a substantial amount of money to be raised by local governments, probably by borrowing in the bond market.

Discourages local governments from raising user fees to levels covering the full cost of service.

Continues the precedent of a large share of the cost of construction being provided by non-local sources.

Cost to State: Appropriation of \$45 million per year for a total of \$225 million over 5 years.

or

Sale of \$225 million in bonds at 10 percent will cost **\$439 million**. An average cost of \$19 million per year for 23 years, with a peak payback of 33 million in the sixth year. (Assumed constant principle in repayment schedule.)

Cost to Local Government: Sale of \$225 million in bonds at 10 percent would cost **\$439 million**, plus cost of bond counsel and investment bankers. (Interest rate for smaller communities may be slightly higher.)

Impact on User Fees: an increase of \$.28 per thousand gallons or \$2.77 per month per average household (3.2 persons) would be necessary to finance the local share of project costs, assuming funds were borrowed in the bond market at 10 percent and debt service was paid entirely from user fees.

2. **Clean Water Bond/ Loan Program:** state borrows funds in bond market and makes loans to local government for the full amount of the non-local share and provides an interest subsidy of 5 percent (assuming a market rate of 10 percent.) Could vary the interest subsidy based on need and financial capacity of local governments.

Advantages: simplifies the funding process if state provides loans covering the full amount of non-federal share.

Reduces cost of borrowing since the state has a slight interest rate advantage over local governments (at least in the case of smaller units) and eliminates the need for local government to pay bond counsel and investment bankers.

Opens up the possibility of revenue bond financing, with the state buying local revenue bonds. The advantage is that no local referendum would be required before issuing revenue bonds. In addition, state purchase of local revenue bonds gets around the problem that currently there is no market for issues of less than \$3 or \$4 million, substantially more than many small communities would need to borrow.

Sets a precedent for shifting the major portion of financing responsibility back to local governments.

Would encourage (and might require) that user fees be raised to levels reflecting the full cost of service.

Reduces the cost to state government, when compared with bond/grant program, to build the same number of projects.

Could be administered in a manner similar to the earlier Clean Water Bond programs with the Environmental Management Commission deciding which projects should receive loans and the Local Government Commission administering the loan program. (The Local Government Commission already has the authority to set local water and sewer rates at a level necessary to cover debt service.)

Disadvantages: requires that state government borrow more funds in the bond market (\$450 million as compared to \$225 million required by the bond/grant program).

Administrative costs may be somewhat higher since the loans would have to be serviced over a 23-year period. (However, it should be noted that the Local Government Commission already monitors local government repayment of bonds sold on Wall Street. Administration of the loan program should not be substantially more expensive than costs currently incurred.)

Cost to State: Sale of \$450 million in bonds at 10 percent with one-half (or 5 percent) of the interest being paid by the state and the remaining interest and principal being paid by local governments would cost the state a total of \$214 million, or an average of \$9 million per year for 23 years, with a peak payback of \$20 million in the sixth year.

Cost to Local Governments: repayment of \$450 million in loans for 18 years at 5 percent would cost \$664 million.

Impact on User Fees: user fees would increase by \$.42 per 1000 gallons or \$4.16 per average household (3.2 persons).

3. **Subsidized Interest Program:** State makes grants to local governments to cover one half of the interest (assume 5 percent of a 10 percent market rate).

Advantages: lowers cost of borrowing to local governments.

Eliminates need for large state bond issue, as compared to Options 1 and 2.

Disadvantages: cost to local government would be slightly higher than in Option 2.

Would involve issuance of payments to local governments over the life of their loans.

Cost to State: same as Option 2 -- \$214 million over 23-year period with peak payment of \$20 million in the sixth year. (This assumes 18-year bonds, issued over a five year period.)

Cost to Local Government: same as Option 2, except that interest rates for smaller communities may be higher and participating local governments will pay fees for bond counsel and investment bankers.

Impact on User Fees: same as Option 2 -- an increase of \$.42 per thousand gallons or **\$4.16** per average household.

4. **Revolving Loan Fund Financed by Bonds:** state borrows a total of \$855 million in the market over a period of 18 years to establish a permanent revolving loan fund. (Borrowing would begin with \$90 million per year and decline as repayments from local governments revolved back into the fund.) Fund provides loans up to 50 percent of the total cost of project. General appropriations used to pay debt service. Loan repayments from local government are returned to permanent loan fund. Interest rate charged to local government should be sufficient to cover administrative costs and erosion of fund value due to inflation. (Assumes 5 percent interest for costing this option.)

Advantages: simplifies financing process for local governments by covering the non-federal share with a single loan from state government.

Minimizes interest cost to local government.

Shifts responsibility to local government for repaying principal.

Establishes a permanent fund available for financing projects in the future.

Disadvantages: substantially higher costs to state.

Program has the effect of leaving to state government substantial responsibility for planning the long-term financing of water and waste water facilities.

Shifts the burden of financing long-term investments to taxpayers in the near-term.

Puts the state in the position--over the long-term--of assuming all of the financial risk rather than sharing it with private investors and local governments as is the case in Option 2.

In the likely event that EPA funds are not available, local governments would still need to borrow 42 percent of the construction costs in the private market or set them aside in a capital reserve.

Cost to State: Sale of \$855 million in bonds at 10 percent would cost \$1,667 million or an average cost of \$46 million per year for 36 years with a peak payback of \$90 million in the 14th year.

During the first five years, (calculated for purposes of comparison with other options) the sale of \$400 million in bonds at 10 percent would cost \$878 million or an average cost of \$38 million a year for 23 years, with a peak payback of 65 million in the sixth year.

Cost to Local Government: through 1991, costs would be the same as in Option 2, except that the interest rate will vary with inflation.

Impact on User Fee: Same as Option 2 -- An increase of \$.42 per thousand gallon or \$4.16 per average household.

5. **Dedicated Sales Tax/Grants:** state repeals 1/2-cent local option tax and instead levies an additional 1-cent sales tax with the stipulation that 32 percent of the revenues to be used for grants to local governments for water and waste water treatment facilities. Grants would be for 100 percent of non-federal share.

or

State keeps the 1/2-cent local option tax and levies an additional 1/2-cent tax at the state level with 32 percent designated for water and waste water treatment facilities. Grants would be for 50 percent of the non-federal share.

Advantages: Dedicating a stream of revenue to meet identified long-term needs.

Disadvantages: Subsidizes water and sewer rates, tending to keep them artificially low with the result being that conservation is discouraged and larger investments in capacity are needed than might have been the case if user rates reflected the full cost of service.

Shifts to state government more responsibility for planning long-term financing of water and waste water facilities.

To the extent the sales tax is regressive, the cost of water and sewer facilities would fall more heavily on low income taxpayers.

Cost to State: 32 percent of revenues from 1 percent sale tax amount to \$90 million per year or \$450 million over a period of five years.

or

Thirty-two percent of the 1/2-cent sales tax generates \$45 million per year or \$225 million over five years.

Cost to Local Government: none until 1992, at which time revenues will have to be found to replace the EPA share.

or

With an additional 1/2-cent sales tax distributed at the state level on the basis of need, local governments would have to borrow \$225 million in the bond market, which would cost \$439 million over 23 years, some portion of which might be covered by the 1/2-cent local option tax.

Impact on User Fees: none.

6. ~~**Tax on Water and Sewer Services/Grants:**~~ state levies a tax on water and sewer services as a means of generating revenue to finance future construction and makes grants to localities to cover the non-federal share of construction costs.

Advantages: provides a mechanism which (in effect) raises user fees to a level sufficient to cover the cost of plant and equipment.

Provides a source of revenue directly related to the service being financed.

Disadvantages: penalizes those communities which have already raised their water and sewer rates to levels sufficient to cover long-term capital costs.

Would probably generate pressure to give communities the option of not participating in the program if they could demonstrate that they intended to be self-sufficient over the long-term.

Tax on user fees would be regressive, falling more heavily on low income users.

Cost to State: tax of \$.24 per thousand gallons of publicly supplied water and \$.24 per thousand gallons of publicly treated waste water would generate \$90 million per year. (Revenue estimate based on a U.S. Geological Survey estimate (1980) of 570 million gallons per day of publicly supplied water and 460 million gallons per day of publicly treated waste water.)[6]

Cost to Local Government: none until 1992, at which time revenues will have to be found to replace the EPA share.

Average tax per household: Assuming 109 gallons per person per day and 3.2 persons per household, the average tax per household would be \$5.11 per month or \$61.32 per year. (Cost per household was derived by assuming an average per capita water use of 109 gallons per day, 3.2 persons per household, 365 days in a year, and sewage equivalent to water used.)

Impact on User Fees: none.

FOOTNOTES

1. Water Information News Service, Vol. IX, No. XI, November 5, 1984. p. 3.
2. David H. Moreau and Dale Whittington, Financing Water Supply and Wastewater Services in North Carolina in the 1980s, Water Resources Research Institute, Raleigh, N.C., February 1984. p. xi.
3. Ibid., p. 18.
4. Robert A. Hamilton, "What will we do when the well runs dry?", Harvard Business Review, November-December 1984, No. 6, pp. 28-40.
5. Cost estimates and other technical advice were provided by Dr. David H. Moreau, Department of City and Regional Planning, University of North Carolina at Chapel Hill.
6. Wayne B. Solley, et. al., Estimated Use of Water in the United States in 1980, U.S. Geological Survey, Circular 1001, p. 10.

one - 11. origin

F. FINANCING ALTERNATIVES	Cost to Local Government	Cost to State Government	Total Cost	Increase in User Fees needed to finance loan	Encourages Raising User Fees	Risk to State Government	Risk to Local Government	Placement of Burden in Time	Who Bears Cost	Who Plans
CLEAN WATER BOND GRANT PROGRAM	\$439 M	\$439 M	\$878 M	\$2.77 per month per hh	No	Low	Med.	Cost born by future taxpayers and users 23 yr. payback	State tax-payers, users xx Federal tax-payers	government/ government
CLEAN WATER BOND LOAN PROGRAM	\$664 M	\$214 M	\$878 M	\$4.16 per month per hh	Yes	Med.	Low	Cost born by future taxpayers and users 23 yr. payback	State tax-payers, users xx Federal tax-payers	Local government/ state government
SUBSIDIZED INTEREST PROGRAM	\$664+M	\$214 M	\$878* M	\$4.16 per month per hh	Yes	Low	Med.	Cost born by future taxpayers and users 23 yr. payback	State and local taxpayers, users	Local government/ state government
REVOLVING LOAN FUND FINANCED BY BONDS (1ST FIVE YEARS)	\$664 M	\$878 M	\$1,542 M	\$4.16 per month per hh	Yes	High	Low	Cost born by future taxpayers and users	State tax-payers, users xx Federal tax-payers	State government/ local government
DEDICATED SALES TAX GRANTS	None until 1992	\$450 M	\$450 M		No			Today's taxpayers	North Carolina consumers with poor bearing of burden because of regressive nature of sales tax	State government/ local government
TAX ON WATER AND SEWER	None until 1992	\$450 M	\$450 M	(\$5.11 per month per hh)	No			Today's users	Users	State government/ local government

*Cost to local gov. will be slightly higher in this option because smaller units may pay slightly higher interest rates.

**assumes local gov. finances its share with revenue bonds.

